MOTOROLA

Personal Communications Sector

V8088

GSM Service Support

Training - Documentation - Engineering

Level 1 and 2
Service Manual
09/02/00
Ver 1.2

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SECTION 1: GENERAL

1.1 Introduction

This manual is intended for use by technicians familiar with similar types of equipment. It contains all service information required for the equipment described and is current as of the printing date.

The scope of this document is to provide the reader with basic information relating to the V8088, and also to provide procedures and processes for repairing the units up to and including Level 2 repair.

Level 1 and 2 repairs involve the following activities to be carried out: -

- Unit swap out
- Repairing of mechanical faults
- Basic modular troubleshooting
- Testing and verification of unit functionality
- Upgrading software
- Flexing units
- Initiate warranty claims and send faulty modules to Level 3 or 4 repair centres.

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1.2 Motorola Service Policy for V8088 in warranty

1.2.1 Warranty:

Product will be sold with the standard 12 months warranty terms and conditions. Accidental damage misuse, retailers extended warranties will not be supported under warranty. Non warranty repairs will be available at agreed fixed repair prices.
Proof of purchase will be required to validate warranty claims.

1.2.2 Out of Box Failure Policy

The standard OOB failure criteria will apply. Customer units that fail very early on, after date of sale, are to be returned to Manufacturing for root cause analysis, to guard against epidemic criteria. Manufacturing to bear the costs of early life failure.

1.2.3 Product Support

Customers original units will be repaired but not refurbished as standard. Appointed Motorola Service Hubs will perform warranty and non-warranty field service for level 2 (assemblies) and level 3 (limited PCB component). The Motorola HTC centres will perform level 4 (full component) repairs.

1.2.4 Customer Support:

This will be available through dedicated Call Centres and In Country Help Desks.
Product Service training should be arranged through the local Motorola Support Centre.

1.2.5 Replacement Parts Ordering

Only centres authorized to carry out repairs will be able to purchase spare parts. Orders for spare parts from Hub’s and Hi-Tech Centres should be placed with the regional Motorola Parts Distribution Centre.

1.3 General Safety Information

1.3.1 Portable Operation

- DO NOT hold the radio so that the antenna is very close to, or touching, exposed parts of the body, especially the face or eyes whilst transmitting. The radio will perform best if it is held in the same manner as you would hold a 'land' telephone handset, with the antenna angled up and over your shoulder.

- DO NOT operate the portable phone in an aircraft. Switch off your telephone. The use of a cellular telephone in an aircraft may be dangerous to the operation of the aircraft, disruption of the Cellular Network may occur, and is illegal. Failure to observe this instruction may lead to a suspension or denial of Cellular Telephone Service to the offender, or legal action, or both.

1.3.2 Mobile/Portable Operation - Telephone use in Vehicles:

- All equipment must be properly grounded according to installation instructions for safe operation.

- Users are advised to turn off their equipment when at a refueling point.

- Safety is every driver's responsibility. Cellular telephones should only be used in situations in which the driver considers it safe to do so.

1.3.3 General

- DO NOT allow children to play with any radio equipment containing a transmitter.

- DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere. Mobile Telephones are, under certain conditions, capable of interfering with blasting operations. When you are in the vicinity of such work, look out for and observe signs cautioning against mobile radio transmission. If transmission is prohibited, you must turn off your mobile telephone to prevent any transmission.
  In standby mode the mobile telephone will automatically transmit to acknowledge a call if it is not turned off.

- Refer to the appropriate section of the product user manual for additional pertinent safety information

- All equipment should be serviced only by a Motorola qualified technician.

SECTION 2:
V8088
DESCRIPTION

2.1 Specifications of V8088

General

Function	**Specification**
Frequency Range GSM Frequency Range DCS	880-915 MHz TX (with EGSM) 925-960 MHz RX 1710-1785 MHz Tx 1805-1880 MHz Rx
Channel Spacing	200 kHz
Channels	174 GSM/374 DCS carriers with 8 channels per carrier
Modulation	GMSK at BT = 0.3
Transmitter Phase Accuracy	5 Degrees RMS, 20 Degrees peak
Duplex Spacing	45 MHz GSM 95MHz DCS
Frequency Stability	± 0.10 ppm of the downlink frequency (Rx)
Operating Voltage	3.9V dc to +6.0Vdc (Batt)
Transmit Current	Typically 200ma avg, 1.0A peak
Stand-by Current	Typically 10 ma (DRX2) GSM Typically 6mA DCX 2 4mA at DCX9 DCS
Dimensions	83mm x 50mm x 24.8mm
Size (Volume)	71 cc
Weight	79g with 600mAh Battery
Temperature Range	-20C to +55C GSM / -25C to +55C DCS

Transmitter

Function	***Specification***
RF Power Output	32 dBm ± 2dB GSM / 30 dBm ± 2 dB DCS
Output Impedance	50 ohms (nominal)
Spurious Emissions	-36 dBm from 0.1 to 1 Ghz -30 dBm from 1 to 4 Ghz

Receiver

Function	***Specification***
RF Level	-102 dBm GSM -100dBm DCS
RX bit error rate (100 k bits)	< 2%
Channel Hop Time	500 microseconds
Time to Camp	Approximately 10 seconds

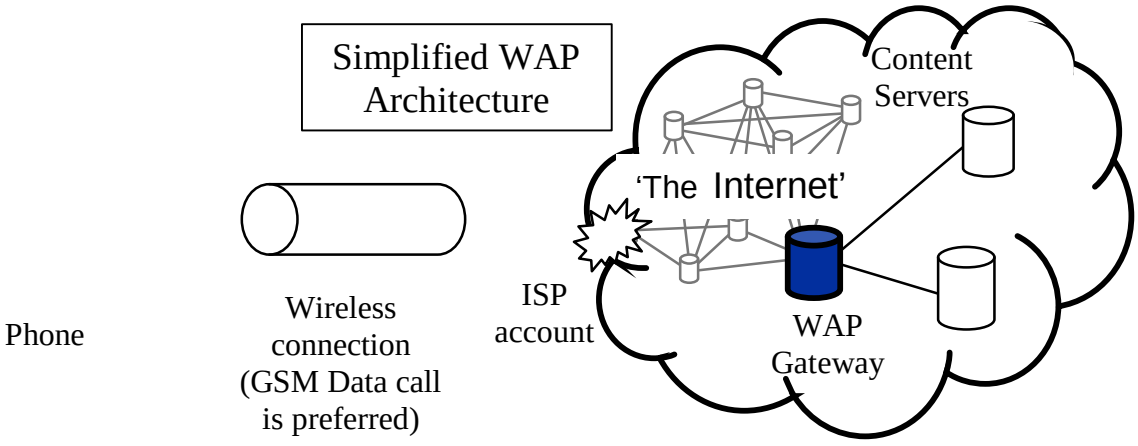
Speech Coding

Function	***Specification***
Speech Coding Type	Regular Pulse Excitation / Linear Predictive Coding with Long Term Prediction. (RPE LPC with LTP).
Bit Rate	13.0 k bps
Frame Duration	20 ms
Block Length	260 bits
Classes	Class 1 bits = 182 bits. Class 2 bits = 78 bits
Bit Rate with FEC Encoding	22.8 k bps

2.2 V8088 Overview

The V8088 is the V. series unit aimed at people that belong to a world of personal expression, status and individuality through belonging.
Based on the current V Series V3688. The V8088 keeps the same form factor but incorporates a host of new features these being:

- **Visual Alert** –This is a 3 Colour Static or flashing coloured light on the top of the flip which can be linked to the users phone book to give an indication to the importance of the call without the need for having to open the flip. Or to give an indication of an anonymous caller.There can be 5 user groups within the SIM card and the phone memory.
- **Full Duplex Voice notes** with selectable erase. Total length of 3 mins
- Within the last 10 calls there will be a new **Unaswered Call List** to compliment the existing Last 10 calls list within the menu structure.
- **Scheduled Auto call Forward**, this option can be tied in with the service provider to automatically divert any calls during certain times of the day that the user decides.
- **Graphical User Programmable Ringer Tones**– This feature allows the user to save, play, edit, send and receive musicical score to personalise their own ringer tones. Can support 3 Ictaves and 35 notes allowing for 'flat and sharp' notes.
  Notes will be sent and received via SMS.
- **Enlarged phone book**, now allows up to 300 entries into the phone memory.
- **General alarms:** an alarm clock is now available giving upto 5 alarms with upto 40 character memo's to each alarm.
- **Retrieve phone number from SMS**. At present during a call, the callers phone number will be displayed within the display, but for SMS the options must be accesed before the number can be accessed . this new functionality will display the number at the same time as the message.
- **VA / VR** The Voice Recognition and Voice Annotation will be as for the L7089 / L7189, for VR the unit must be 'trained' i.e. The user must program the name to be recognised into the unit before the function will work.
- **New series of ringer tones**, these are just additions to the existing V3688 set of tones.
- **Concatenated SMS – '**Concatenated – A series of Linked events'
  This function increases the amount of characters that can be sent and received from the unit. Currently we can send 160 Character SMS messages of which we can store 10 of these the new functionality will allow us to support 5 X 153 Character messages, the SIM will be able to store between 30 and 75 slots dependant on card holding 160 characters in each slot.
  The new functionality will also be able to add separate messages together if they form part of the same message
- **WAP 1.1** Wireless Application Protocol



- In the WAP environment this is how the access is made.

1. The request for information is made in WML (Wireless Markup Language) derived from HTML.
2. Request is passed to WAP Gateway, which retrieves the information from the server in standard HTML (which is then filtered to WML) or if available WML format.
3. The information is then passed the cellular user, via the cellular network provider.

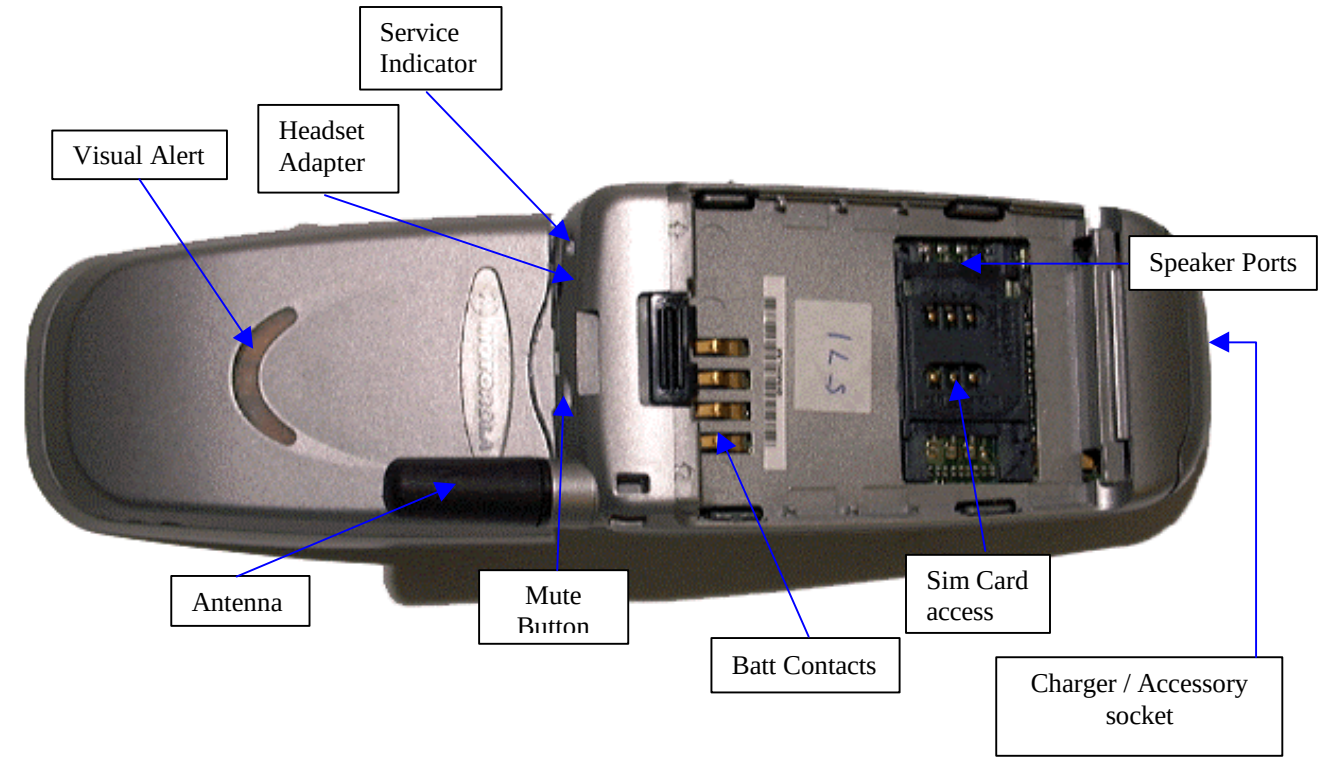
- There will be 5 Data parameters that the user will be able to edit:
  -Baud rate - between 2400 and 14400
  -Idle time out
  -Line type
  -Phone Number
  -Connection type

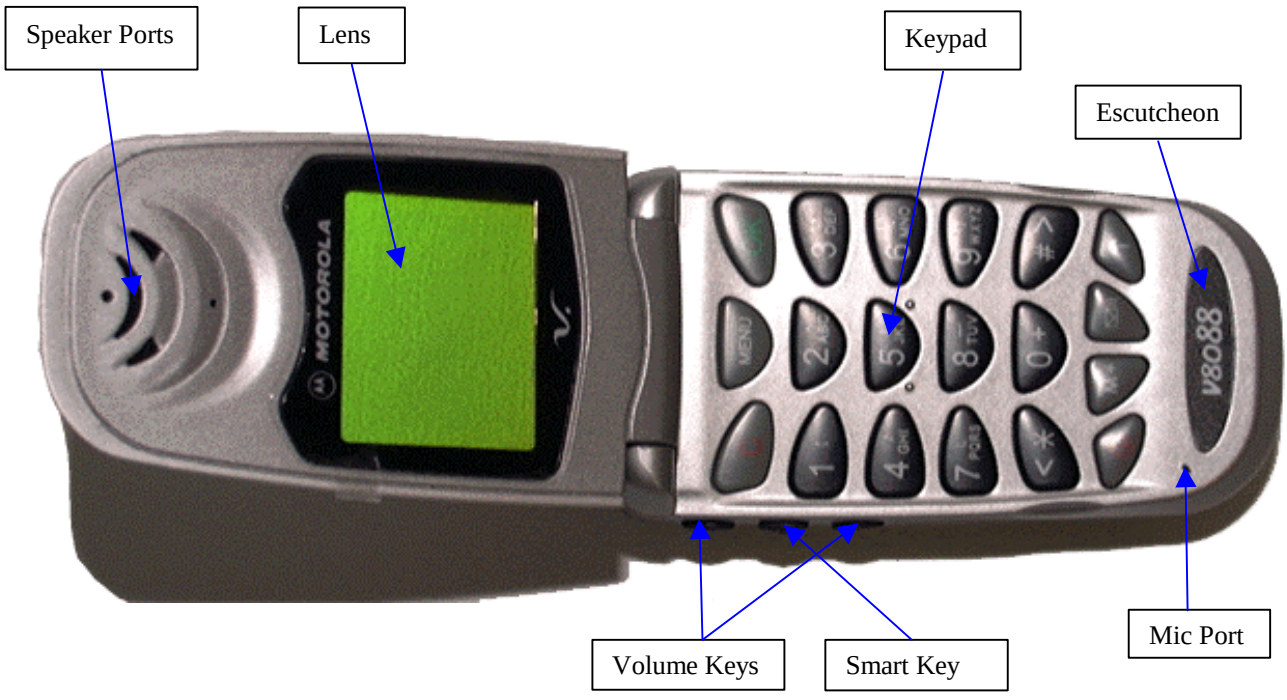
- For image download, the bitmap image will be downloaded as text and if the image is larger than the screen then only part of the image will be displayed

- Ways to access Browser - Quick access key and Feature Menu
  During browser mode, if incoming call is received then the browser will be paused with the user having the option to resume after the call.

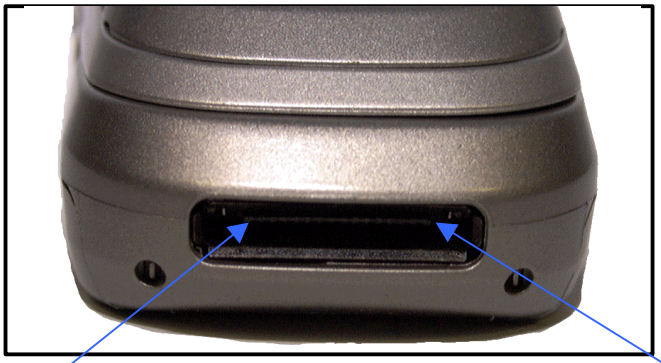
- **STK 2.0 with ChineseUCS2** This will allow the user access to E- commerce as for the StarTAC D to make over the Air Transactions and to update a mobile electronic purse in the form of a separate card. A new accessory will be made available in the near future
- **Enhanced CKE (Chinese Key Entry)**
- **iTAP.** This intelligent text entry method is accessed through the phone set up menu and is only available if iTAP supports the currents set language of the unit.
  As text entry works at the moment, if the user wishes to key in the word the correct numeric key must be pressed the appropriate number of times to type in the correct letter. iTAP works by using a dynamic dictionary to assume the next key entry and by giving the user a choice then the scroll keys can be used for each word instead of different keys throughout. Once a word is completed the OK button can be pressed to enter a word and a space is automatically entered. (See User guide for graphical example).
- The unit will have a shorter antenna than V3688
- 2 New colours will be introduced Lilac and Teal Green , also Platinum Silver and Radar Blue will be available

Fig 2.1 Mechanical pictorial Overview





2.3 Connector Pinout



Charger Socket Pin Layout

1.GND	2.SW_RF
3.GND	4.BATT_FDBK
5.MAN_TEST_AD	6.RS232_TX
7.RS232_RX	8.EXT_CHG_EN
9.ON_OFF	10.GND
11.UPLINK	12.DOWNLINK
13.DSC_EN	14.EXT B+
15.GND	

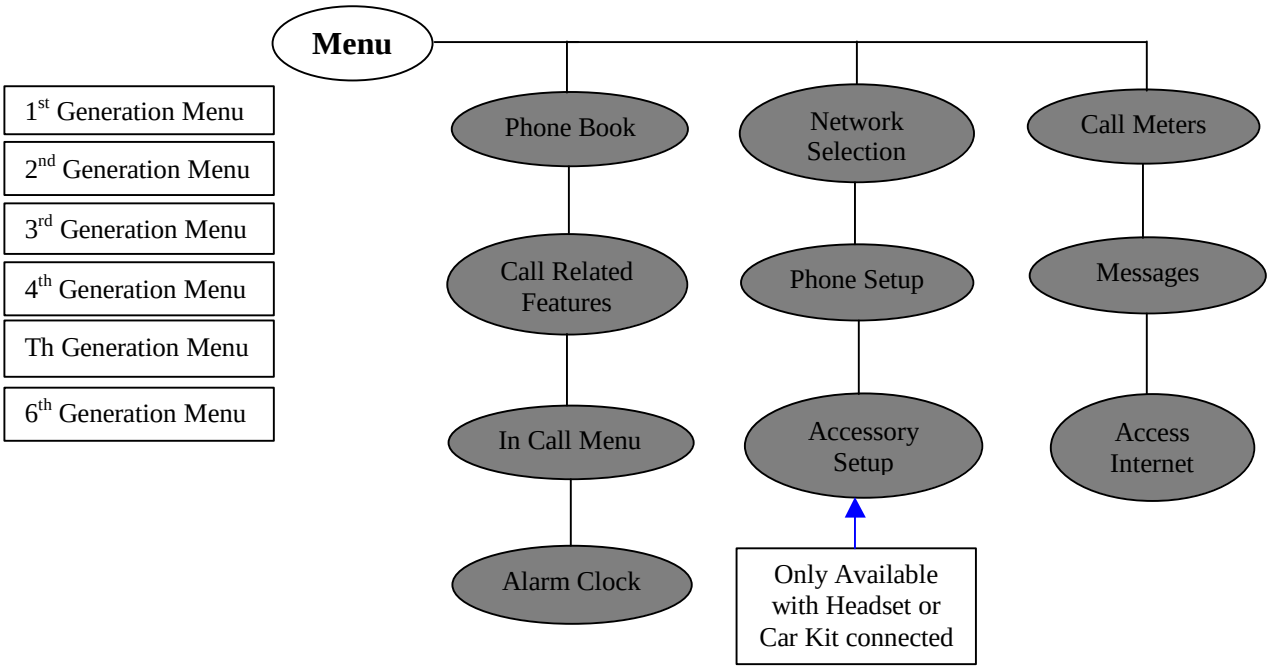
2.4 Talk Times, Weight and Volume Matrix

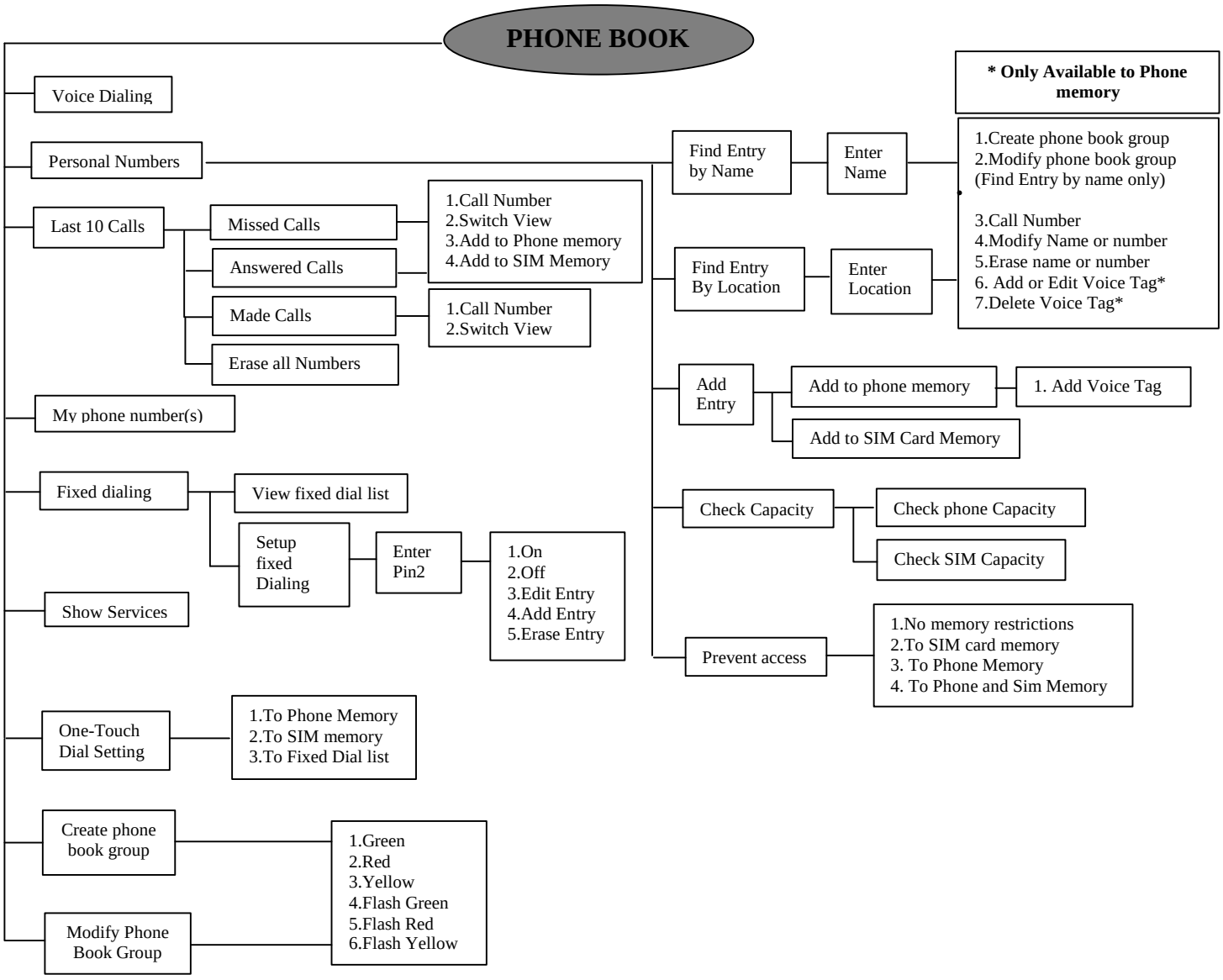
Weight (grams)	Talk Time (minutes)	Standby time (hours)	Size in mm	With Battery type:
79g	120 - 180	40 -100	43 x 83 x 24.8	Ex-Slim 520mAh Li Ion

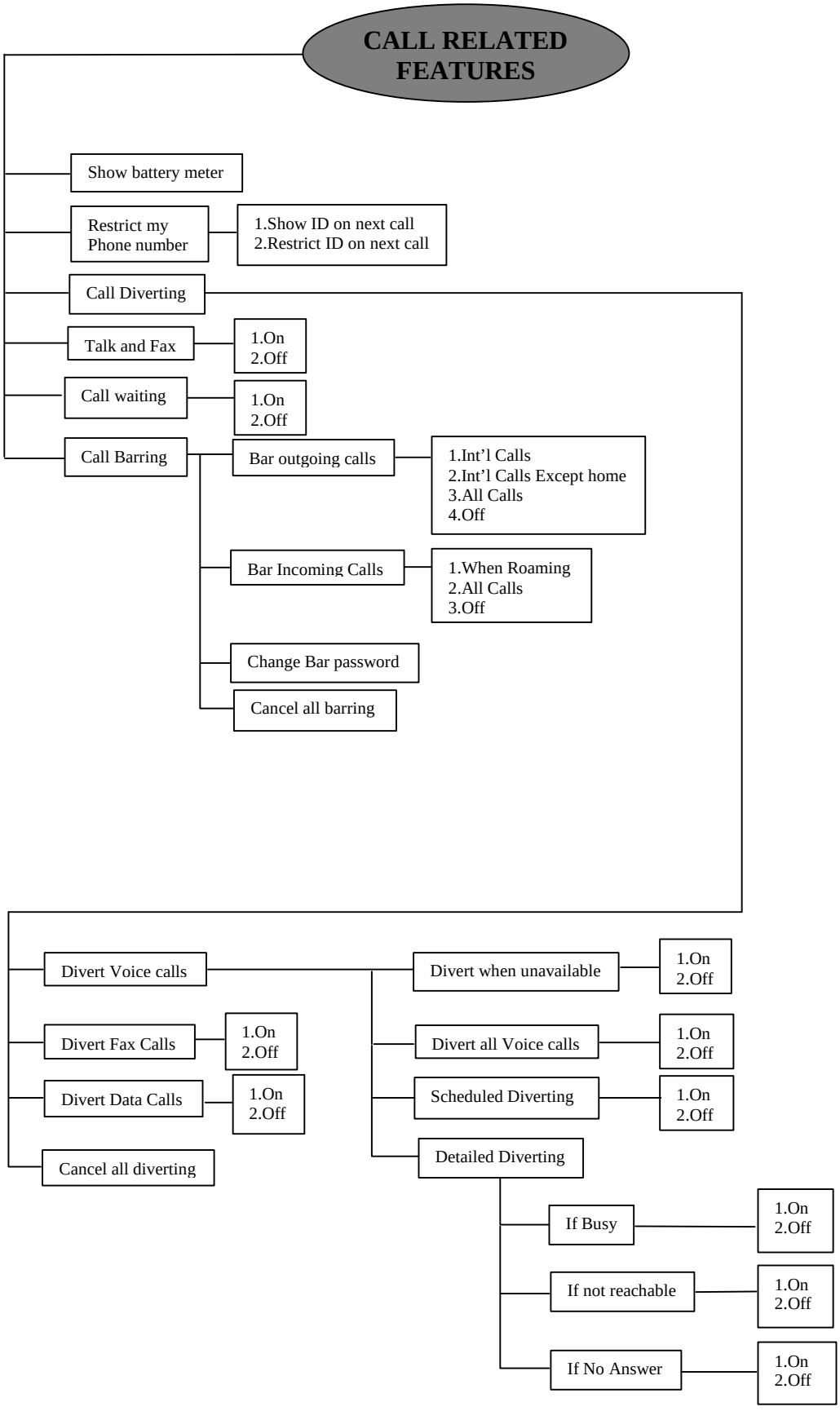
SECTION 3: FEATURE LIST

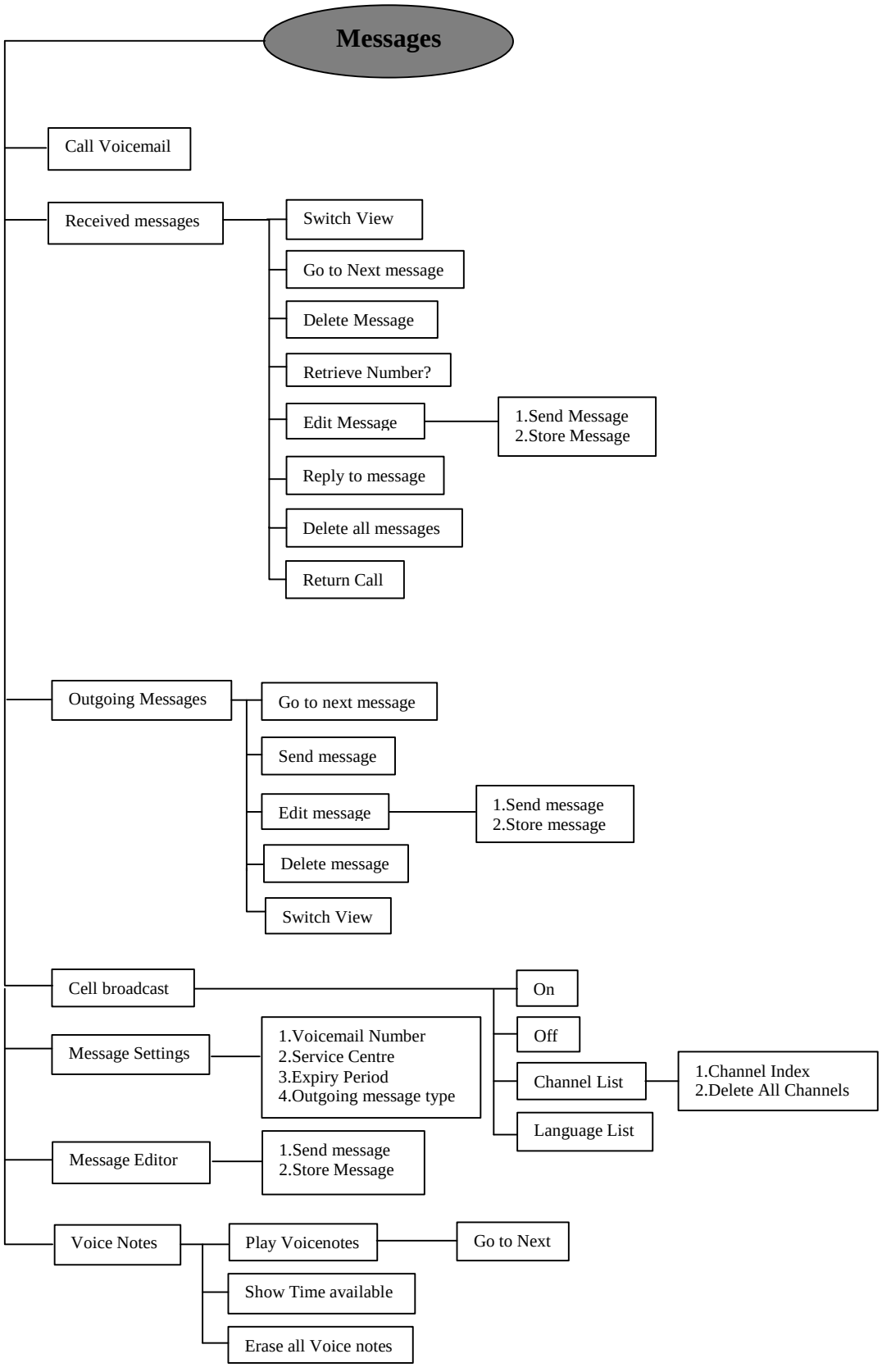
3.1 List of Features Available

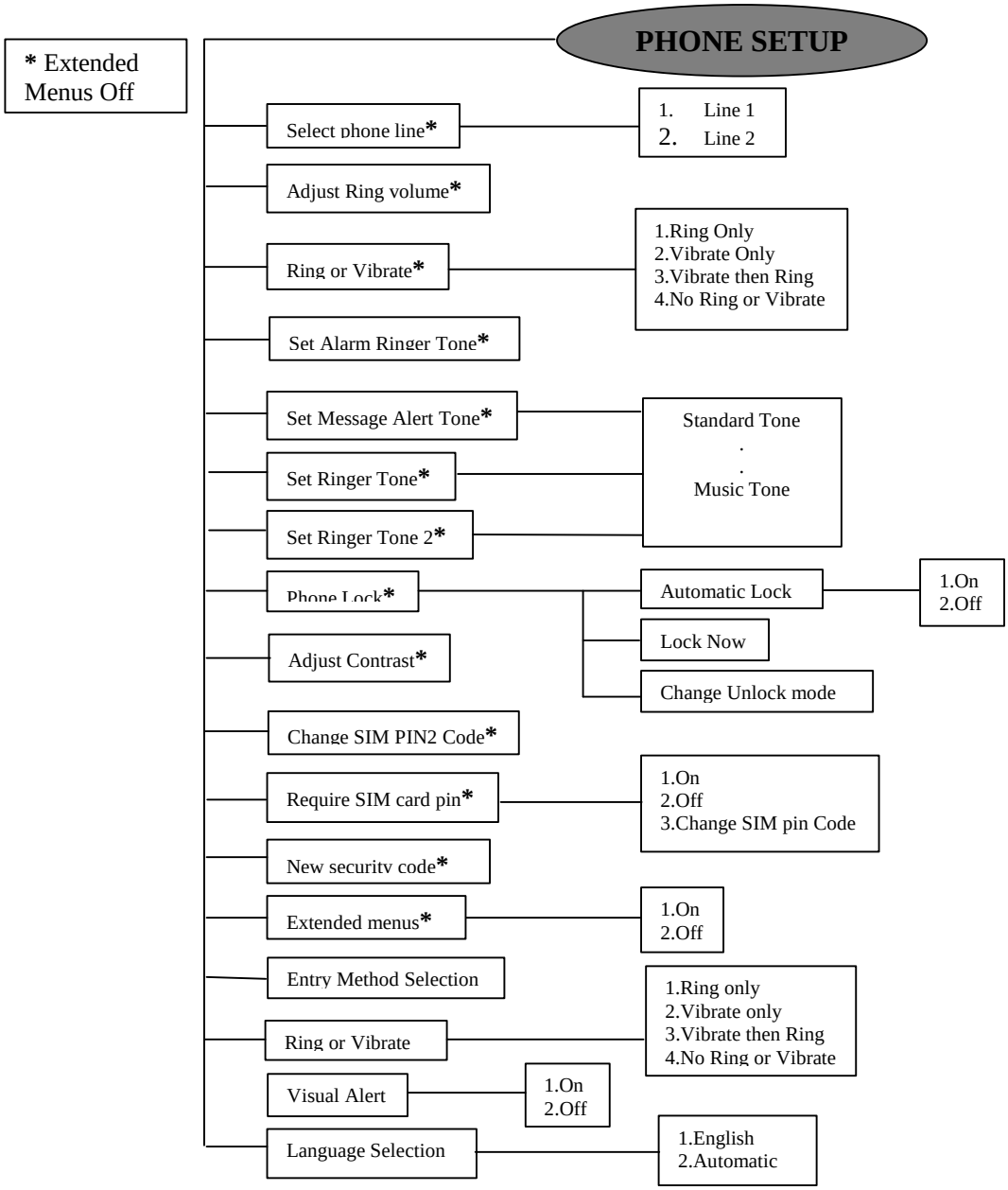
Below is the list of Menu functions available at present.

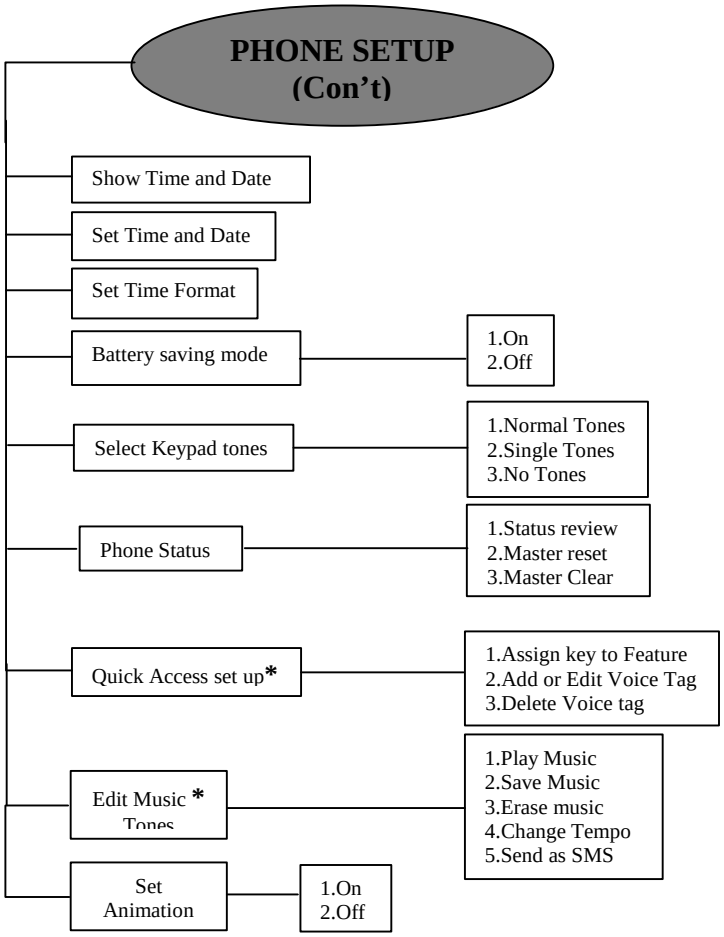


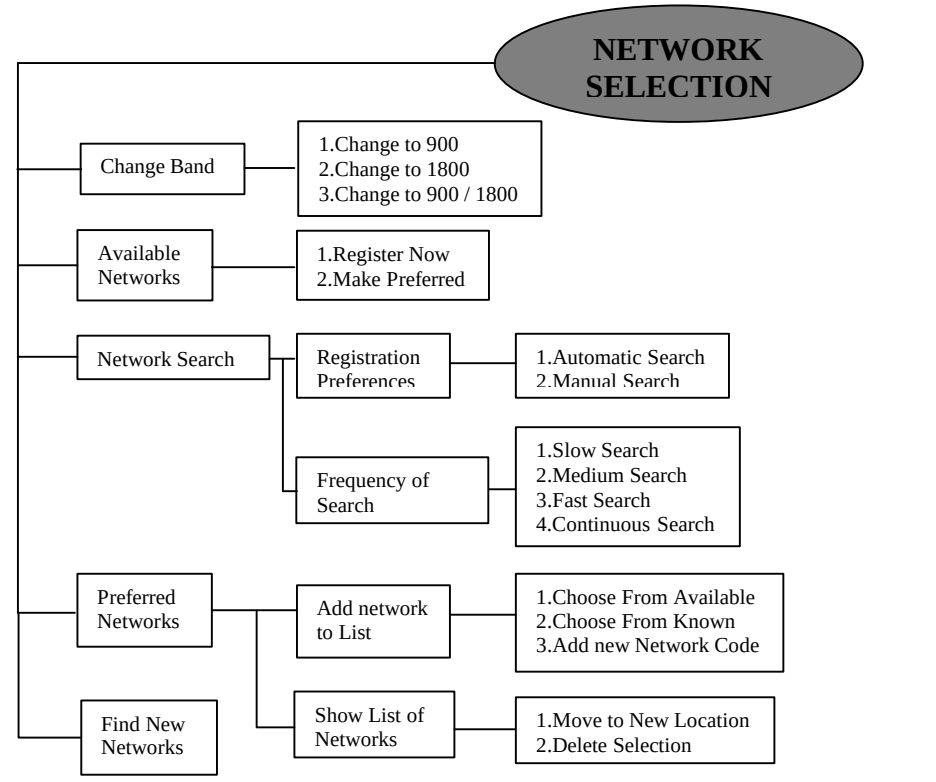

PHONE BOOK
Voice Dialing
Personal Numbers
Last 10 Calls
Missed Calls
Answered Calls
Made Calls
Erase all Numbers
1.Call Number
2.Switch View
3.Add to Phone memory
4.Add to SIM Memory
1.Call Number
2.Switch View
My phone number(s)
Fixed dialing
View fixed dial list
Setup fixed Dialing
Enter Pin2
1.On
2.Off
3.Edit Entry
4.Add Entry
5.Erase Entry
Show Services
One-Touch Dial Setting
1.To Phone Memory
2.To SIM memory
3.To Fixed Dial list
Create phone book group
1.Green
2.Red
3.Yellow
4.Flash Green
5.Flash Red
6.Flash Yellow
Modify Phone Book Group
* Only Available to Phone memory
Find Entry by Name
Enter Name
1.Create phone book group
2.Modify phone book group
(Find Entry by name only)
3.Call Number
4.Modify Name or number
5.Erase name or number
6. Add or Edit Voice Tag*
7.Delete Voice Tag*
Find Entry By Location
Enter Location
Add Entry
Add to phone memory
1. Add Voice Tag
Add to SIM Card Memory
Check Capacity
Check phone Capacity
Check SIM Capacity
Prevent access
1.No memory restrictions
2.To SIM card memory
3. To Phone Memory
4. To Phone and Sim Memory

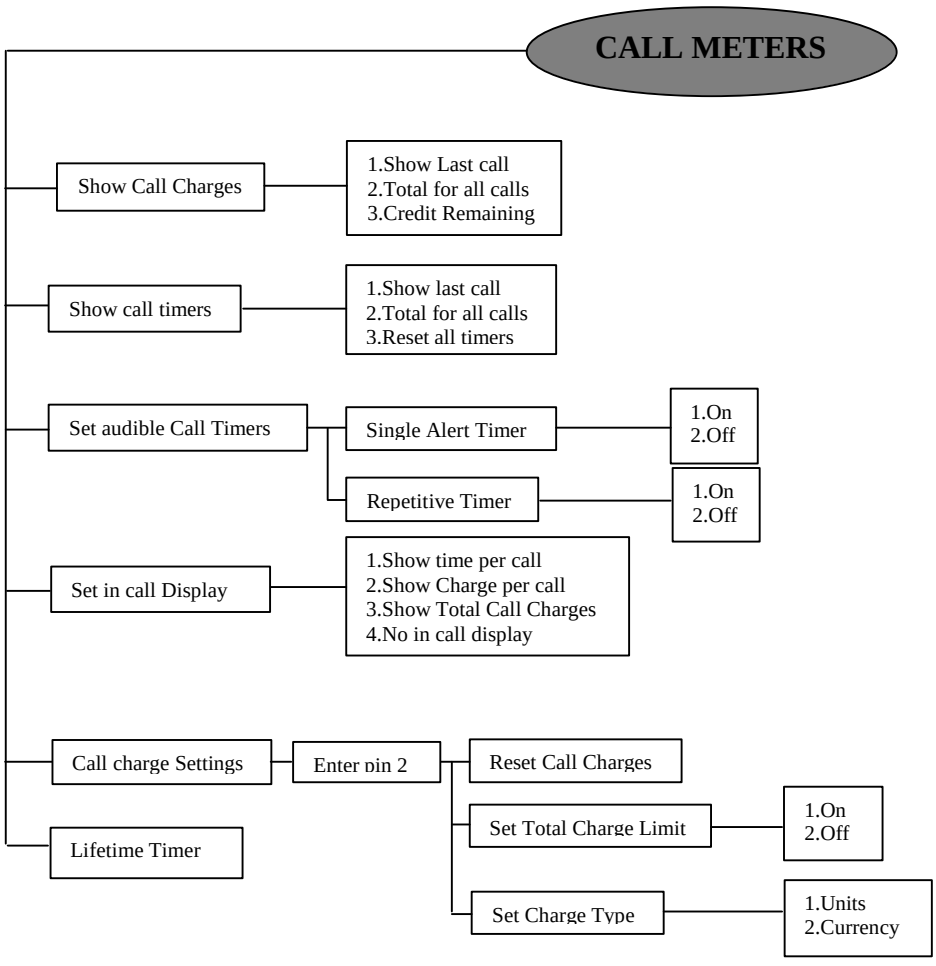

CALL RELATED FEATURES
Show battery meter
Restrict my Phone number
1.Show ID on next call
2.Restrict ID on next call
Call Diverting
Talk and Fax
1.On
2.Off
Call waiting
1.On
2.Off
Call Barring
Bar outgoing calls
1.Int'l Calls
2.Int'l Calls Except home
3.All Calls
4.Off
Bar Incoming Calls
1.When Roaming
2.All Calls
3.Off
Change Bar password
Cancel all barring
Divert Voice calls
Divert when unavailable
1.On
2.Off
Divert Fax Calls
1.On
2.Off
Divert all Voice calls
1.On
2.Off
Divert Data Calls
1.On
2.Off
Scheduled Diverting
1.On
2.Off
Cancel all diverting
Detailed Diverting
If Busy
1.On
2.Off
If not reachable
1.On
2.Off
If No Answer
1.On
2.Off

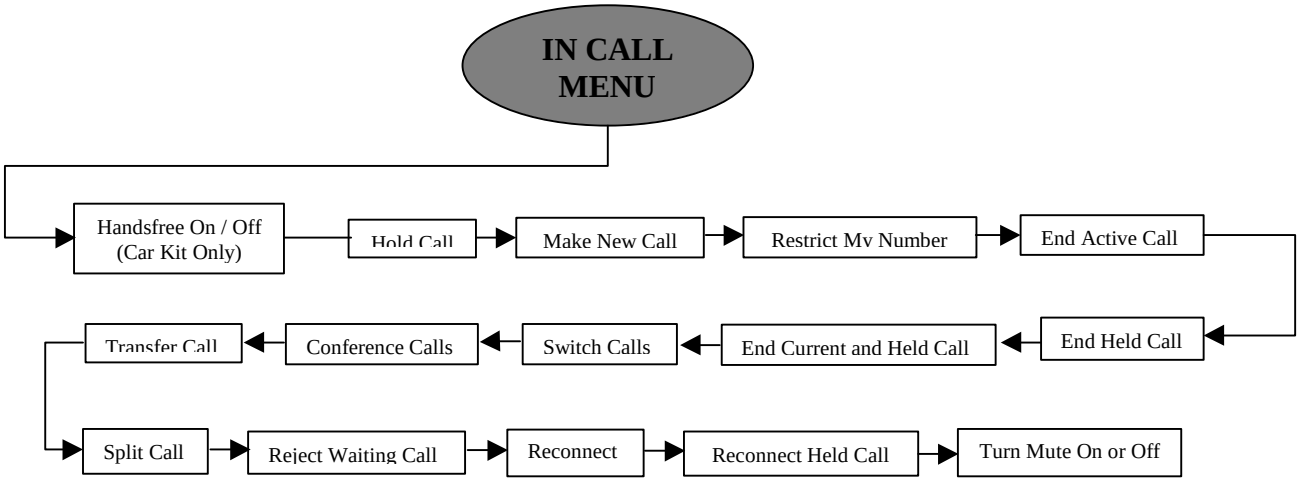

Messages
Call Voicemail
Received messages
Switch View
Go to Next message
Delete Message
Retrieve Number?
Edit Message
1.Send Message
2.Store Message
Reply to message
Delete all messages
Return Call
Outgoing Messages
Go to next message
Send message
Edit message
1.Send message
2.Store message
Delete message
Switch View
Cell broadcast
On
Off
Channel List
1.Channel Index
2.Delete All Channels
Language List
Message Settings
1.Voicemail Number
2.Service Centre
3.Expiry Period
4.Outgoing message type
Message Editor
1.Send message
2.Store Message
Voice Notes
Play Voicenotes
Go to Next
Show Time available
Erase all Voice notes

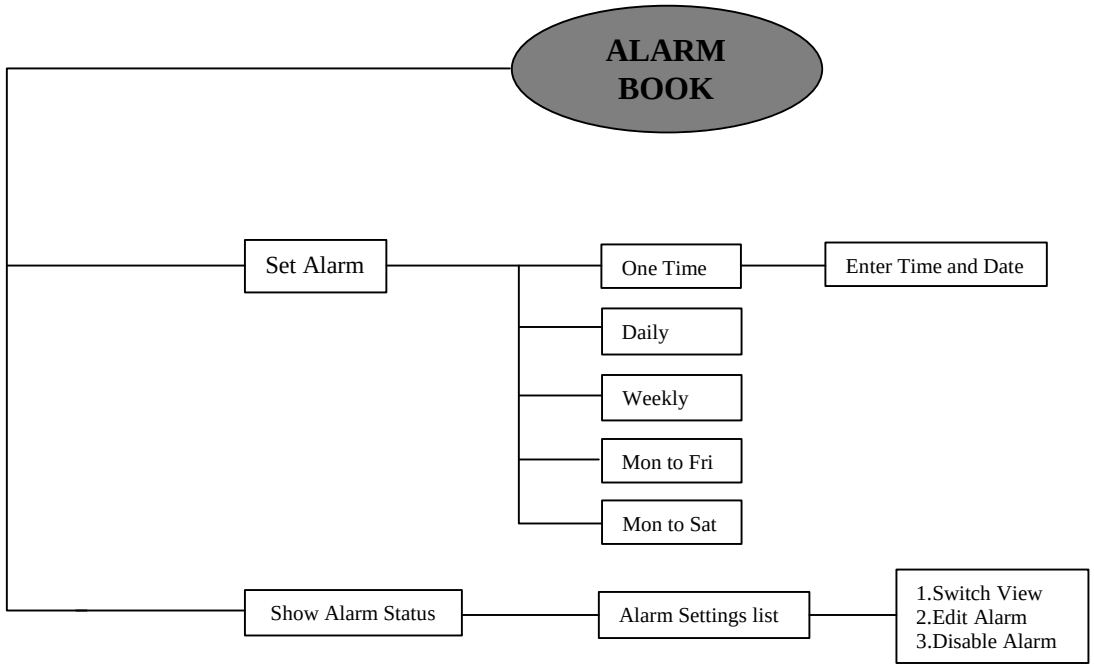

* Extended Menus Off
PHONE SETUP
Select phone line*
1. Line 1
2. Line 2
Adjust Ring volume*
Ring or Vibrate*
1.Ring Only
2.Vibrate Only
3.Vibrate then Ring
4.No Ring or Vibrate
Set Alarm Ringer Tone*
Set Message Alert Tone*
Set Ringer Tone*
Set Ringer Tone 2*
Standard Tone
.
.
Music Tone
Phone Lock*
Automatic Lock
1.On
2.Off
Lock Now
Change Unlock mode
Adjust Contrast*
Change SIM PIN2 Code*
Require SIM card pin*
1.On
2.Off
3.Change SIM pin Code
New security code*
Extended menus*
1.On
2.Off
Entry Method Selection
Ring or Vibrate
1.Ring only
2.Vibrate only
3.Vibrate then Ring
4.No Ring or Vibrate
Visual Alert
1.On
2.Off
Language Selection
1.English
2.Automatic


PHONE SETUP
(Con't)
Show Time and Date
Set Time and Date
Set Time Format
Battery saving mode
1.On
2.Off
Select Keypad tones
1.Normal Tones
2.Single Tones
3.No Tones
Phone Status
1.Status review
2.Master reset
3.Master Clear
Quick Access set up*
1.Assign key to Feature
2.Add or Edit Voice Tag
3.Delete Voice tag
Edit Music * Tones
1.Play Music
2.Save Music
3.Erase music
4.Change Tempo
5.Send as SMS
Set Animation
1.On
2.Off


NETWORK SELECTION
Change Band
1.Change to 900
2.Change to 1800
3.Change to 900 / 1800
Available Networks
1.Register Now
2.Make Preferred
Network Search
Registration Preferences
1.Automatic Search
2.Manual Search
Frequency of Search
1.Slow Search
2.Medium Search
3.Fast Search
4.Continuous Search
Preferred Networks
Add network to List
1.Choose From Available
2.Choose From Known
3.Add new Network Code
Find New Networks
Show List of Networks
1.Move to New Location
2.Delete Selection

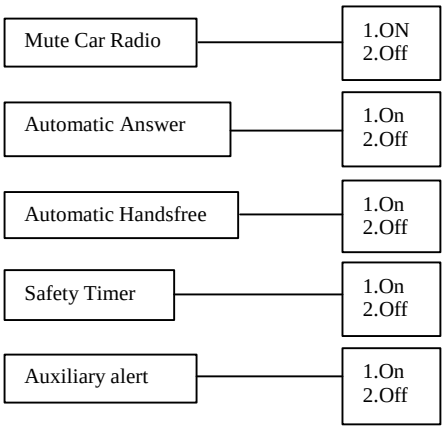

CALL METERS
Show Call Charges
1.Show Last call
2.Total for all calls
3.Credit Remaining
Show call timers
1.Show last call
2.Total for all calls
3.Reset all timers
Set audible Call Timers
Single Alert Timer
1.On
2.Off
Repetitive Timer
1.On
2.Off
Set in call Display
1.Show time per call
2.Show Charge per call
3.Show Total Call Charges
4.No in call display
Call charge Settings
Enter pin 2
Reset Call Charges
Set Total Charge Limit
1.On
2.Off
Set Charge Type
1.Units
2.Currency
Lifetime Timer


IN CALL MENU
Handsfree On / Off (Car Kit Only)
Hold Call
Make New Call
Restrict My Number
End Active Call
End Held Call
End Current and Held Call
Switch Calls
Conference Calls
Transfer Call
Split Call
Reject Waiting Call
Reconnect
Reconnect Held Call
Turn Mute On or Off


ALARM BOOK
Set Alarm
One Time
Enter Time and Date
Daily
Weekly
Mon to Fri
Mon to Sat
Show Alarm Status
Alarm Settings list
1.Switch View
2.Edit Alarm
3.Disable Alarm

ACCESSORY SETUP

NB. THIS MENU IS ONLY AVAILABLE WITH EITHER HEADSET PLUGGED IN OR WHEN INSTALLED IN A CAR KIT.



SECTION 4: DISASSEMBLY & PARTS

4.1 Disassembly Introduction

The V8088 has no screws to hold it together and is held together by plastic catches, these are delicate and should be parted using the upmost care. Also the display flex cable can be torn or broken without too much stress being applied so again caution should be taken on dissassembly or assembly.
Ensure that a properly grounded high impedance conductive wrist strap is used whilst performing any tasks during the disassembly and assembly of the unit
Avoid stressing the plastics in any way to avoid damage to either the plastics or internal components.

!! CAUTION !!

Many of the intergrated devices used in this equipment are vulnerable to damage from electro-static charges. Ensure that adequate static protection is in place when handling, shipping and servicing the internal components of this equipment.

4.2 Recommended Tools

The following tools are recommended for use during the assembly / disassembly of the V8088.

- Anti-static Mat Kit - 0180386A82, includes:
  Antistatic mat 66-80387A95
  Ground Cord 66-80334B36
  Wrist Band 42-80385A59

- Plastic Bladed Tool SLN7223A
- Plastic Antenna Removal Tool: 0-00-00-30007
- Light guide removal Tool: This tool requires modification, will be available shortly
- Flex Removal Pliers: 0-00-00-30002
- Flip Opening Tool: 0-00-00-30008

These can be ordered via the test AMS website: http://212.112.205.178
A Password for this website can be set up through Axel Schneider WFAS120

4.3 Disassembly Procedure

The following set of diagrams will demonstrate the correct sequence and action required to disassemble the V8088
The use of the exploded diagram on pages **23** may be of some assistance for part recognition.

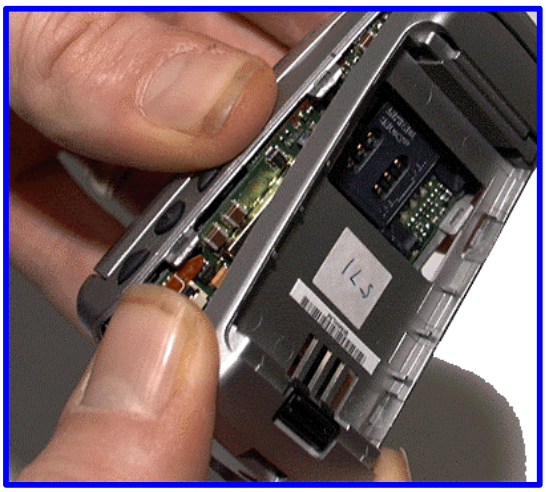
4.4 Assembly Procedure

Once the unit is disassembled and the repair is carried out, the unit must then be reassembled, this is carried out in the exact reverse order as the disassembly.

Tool requires modification; this will be available shortly.

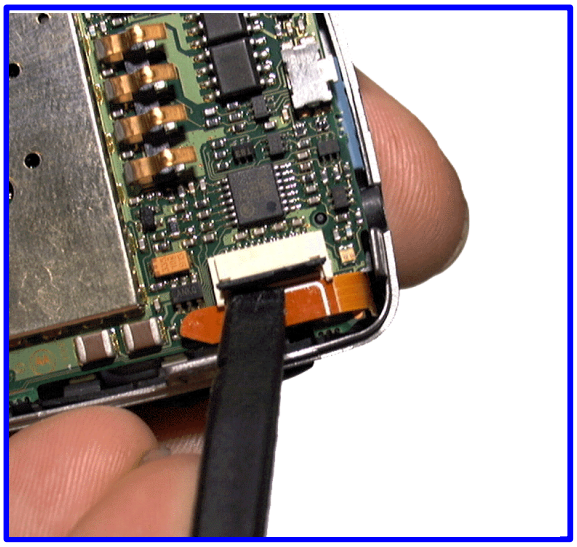
1. Using antenna removal tool, clamp straight edges of tool around flat edge of antenna and rotate clockwise.

2. Remove Light pipe

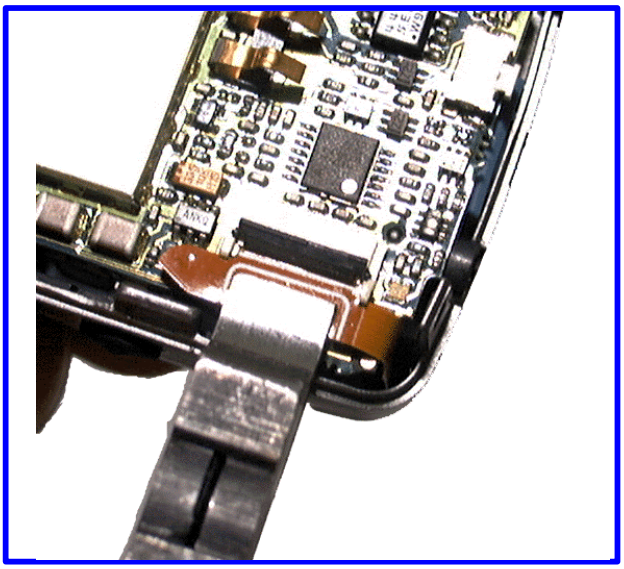


3. Applying pressure to the top of the rear housing insert plastic tool between the rear housing and the 4 latches

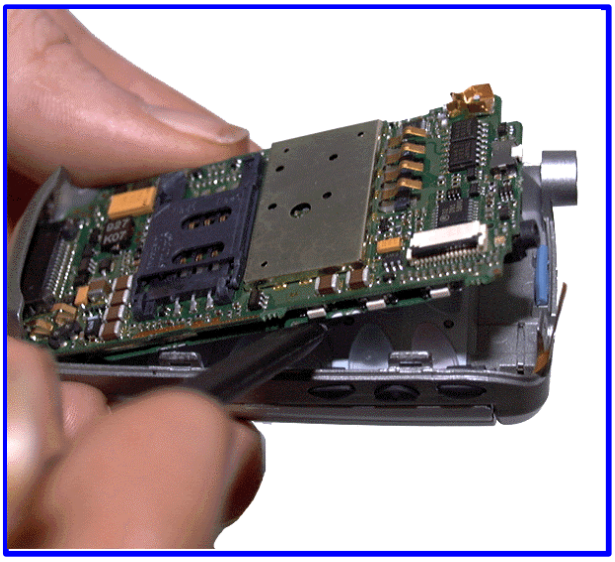
4. Remove rear housing



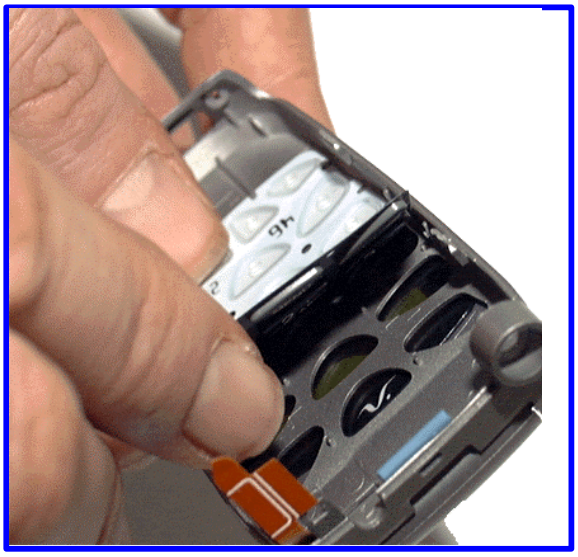
5. Very carefully lift Zif connector.



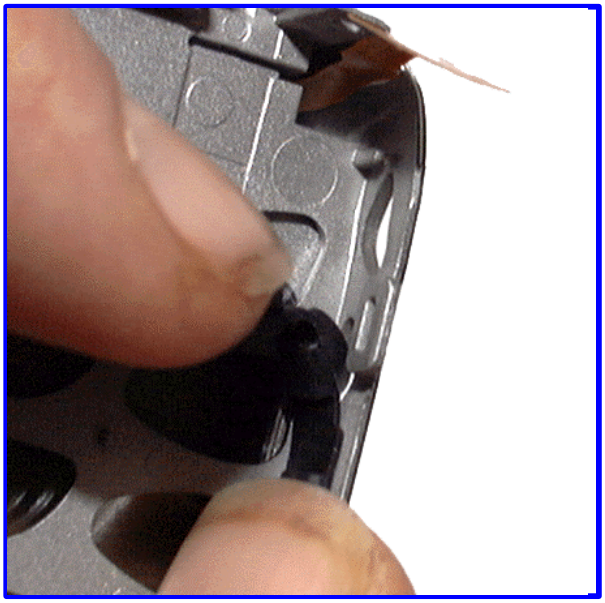
6. Ensure flex pliers are placed in the guidelines on the flex and carefully withdraw flex ensuring it stays parallel to the PCB.



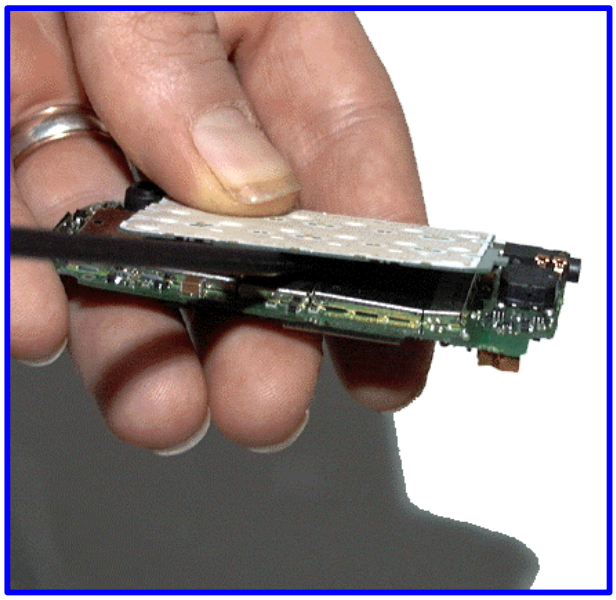
7. Using plastic tool, lever PCB from Front housing



8. Remove keypad from front housing



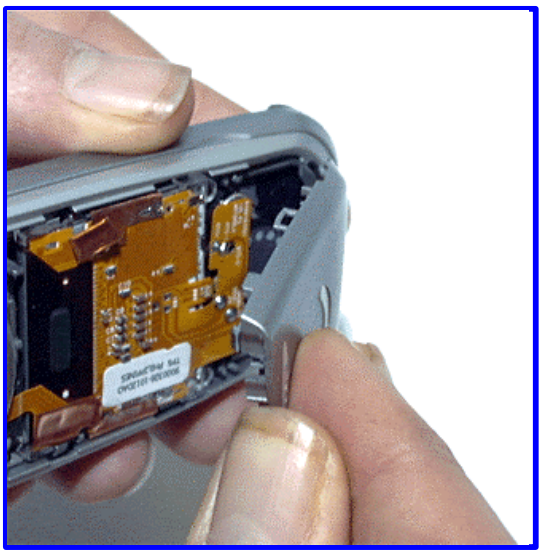
9. Remove volume keys from front housing.



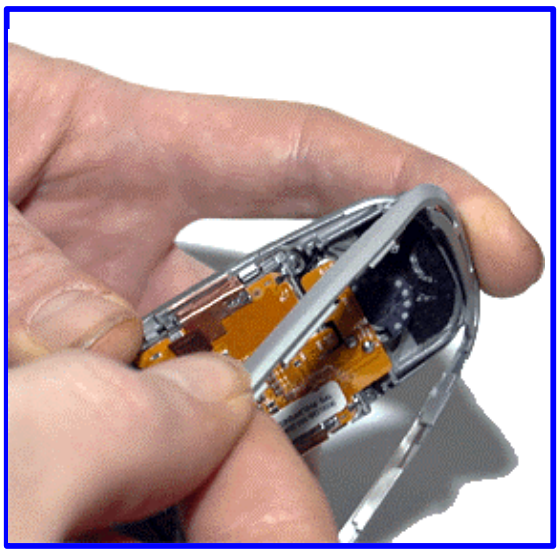
10. Use plastic tool to slide between PCB and Keypad. Ensure care is taken as the boards are glued.

11. Insert hooked end of flip opening tool between flip and hinge, hook under rear of flip cover and lever upwards on both sides

12. Push rubberised end of flip tool down 1 side of flip and rotate by 90deg, repeat on other side.



13. Remove Flip cover.



14.Remove Flip rim, pulling up towards speaker.

4.5 Exploded Parts Diagram

V8088

Replacement Parts

Xcvr Item Number		AAUG1057A	AAUG1058A	AAUG1059A	AAUG1060A
Product	-	Dao	Dao	Dao	Dao
Additional Info	-	English	English	English	English
Colour	-	Radar Blue	Platinum	Teal Green	Lilac
Make	-	Motorola	Motorola	Motorola	Motorola
System	-	GSM900/1800	GSM900/1800	GSM900/1800	GSM900/1800
Spare Xcvr Number	-	Not Available	Not Available	Not Available	Not Available
Spare PCB Number	-	Not Available	Not Available	Not Available	Not Available
Kit Flip-Front	-	AAHN5267A	AAHN5268A	AAHN5302A	AAHN5303A
Assy Front Hsg	-	0170293V02	0170293V03	0170293V05	0170293V04
Assy Flip		0170293U02	0170293U03	0170293U05	0170293U04
Hinge Mechanism	-	5504765Z06	5504765Z06	5504765Z06	5504765Z06
Speaker Earpc 15mm	-	5003880S01	5003880S01	5003880S01	5003880S01
Batt Li 3.3v Coin Cell	-	6003710K06	6003710K06	6003710K06	6003710K06
LCD Display 96x54	-	7202879Z66	7202879Z66	7202879Z66	7202879Z66
Pad Kramer	-	7585766G01	7585766G01	7585766G01	7585766G01
Assy Flip Bottom	-	0170293T02	0170293T03	0170293T05	0170293T04
Assy Flip Top	-	0170293S02	0170293S03	0170293S05	0170293S04
Pad Flip	-	7585719J01	7585719J01	7585719J01	7585719J01
Kit Back Hsg	-	AAYN4155A	AAYN4155A	AAYN4155A	AAYN4155A
Screw Internal Frnt Crick	-	0309147T03	0309147T03	0309147T03	0309147T03
Housing, Back	-	1586230P04	1586230P05	1586230P09	1586230P08
Button Mute	-	3886240P01	3886240P01	3886240P01	3886240P01
Spring Mechanical	-	4186254P01	4186254P01	4186254P01	4186254P01
Spring Compressions	-	4109378U01	4109378U01	4109378U01	4109378U01
Contact Vibrator P	-	3986250P01	3986250P01	3986250P01	3986250P01
Contact Vibrator N	-	3986251P01	3986251P01	3986251P01	3986251P01
Latch Battery	-	5586242P01	5509377U01	5509377U01	5509377U01
Motor Assy, Vibrator	-	0186264P01	0186264P01	0186264P01	0186264P01
Kit Back End Common	-	AAHN5275A	AAHN5275A	AAHN5275A	AAHN5275A
Antenna Assy	-	0186226P01	0186226P01	0186226P01	0186226P01
Grommet Microphone	-	0585699J01	0585699J01	0585699J01	0585699J01
Antenna Insert	-	4385988H02	4385988H02	4385988H02	4385988H02
Mic 6mm	-	5009135L07	5009135L07	5009135L07	5009135L07
Light Guide Main	-	6186241P01	6185635H02	6185635H02	6185635H02
Keyboard	-	AAYN4157A	AAYN4157A	AAYN4157A	AAYN4157A
Adhesive Kybrd	-	1185715J01	1185715J01	1185715J01	1185715J01
SW Array Domes	-	4086213P01	4086213P01	4086213P01	4086213P01

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Battery Door, Slim	-	1586232P04	1586232P05	1586232P09	1586232P08
Battery Door, Standard	-	1586238P04	1586238P05	1586238P09	1586238P08
Battery Door, Extended	-	1586239P04	1586239P05	1586239P09	1586239P08

Kit Dao Unique		AAYN4153A	AAYN4153A	AAYN4153A	AAYN4153A
Keypad	-	7586228P02	7586228P02	7586228P02	7586228P02
Lens Assy	-	6186237P01	6186237P01	6186237P01	6186237P01

Xcvr Item Number		AAUG1061A	AAUG1062A	AAUG1063A	AAUG1064A

Product	-	Dao	Dao	Dao	Dao

Additional Info	-	SCKE	SCKE	SCKE	SCKE
Colour	-	Radar Blue	Platinum	Teal Green	Lilac

Make	-	Motorola	Motorola	Motorola	Motorola
System	-	GSM900/1800	GSM900/1800	GSM900/1800	GSM900/1800

Spare Xcvr Number	-	Not Available	Not Available	Not Available	Not Available
Spare PCB Number	-	Not Available	Not Available	Not Available	Not Available

Kit Flip-Front	-	AAHN5267A	AAHN5268A	AAHN5302A	AAHN5303A
Assy Front Hsg	-	0170293V02	0170293V03	0170293V05	0170293V04
Assy Flip		0170293U02	0170293U03	0170293U05	0170293U04
Hinge Mechanism	-	5504765Z06	5504765Z06	5504765Z06	5504765Z06
Speaker Earpc 15mm	-	5003880S01	5003880S01	5003880S01	5003880S01
Batt Li 3.3v Coin Cell	-	6003710K06	6003710K06	6003710K06	6003710K06
LCD Display 96x54	-	7202879Z66	7202879Z66	7202879Z66	7202879Z66
Pad Kramer	-	7585766G01	7585766G01	7585766G01	7585766G01
Assy Flip Bottom	-	0170293T02	0170293T03	0170293T05	0170293T04
Assy Flip Top	-	0170293S02	0170293S03	0170293S05	0170293S04
Pad Flip	-	7585719J01	7585719J01	7585719J01	7585719J01

Kit Back Hsg	-	AAYN4155A	AAYN4155A	AAYN4155A	AAYN4155A
Screw Internal Frnt Crick	-	0309147T03	0309147T03	0309147T03	0309147T03
Housing, Back	-	1586230P04	1586230P05	1586230P09	1586230P08
Button Mute	-	3886240P01	3886240P01	3886240P01	3886240P01
Spring Mechanical	-	4186254P01	4186254P01	4186254P01	4186254P01
Spring Compressions	-	4109378U01	4109378U01	4109378U01	4109378U01
Contact Vibrator P	-	3986250P01	3986250P01	3986250P01	3986250P01
Contact Vibrator N	-	3986251P01	3986251P01	3986251P01	3986251P01
Latch Battery	-	5509377U01	5509377U01	5509377U01	5509377U01
Motor Assy, Vibrator	-	0186264P01	0186264P01	0186264P01	0186264P01

Kit Back End Common	-	AAHN5275A	AAHN5275A	AAHN5275A	AAHN5275A
Antenna Assy	-	0186226P01	0186226P01	0186226P01	0186226P01

Grommet Microphone	-	0585699J01	0585699J01	0585699J01	0585699J01

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Antenna Insert	-	4385988H02	4385988H02	4385988H02	4385988H02
Mic 6mm	-	5009135L07	5009135L07	5009135L07	5009135L07
Light Guide Main	-	6185635H02	6185635H02	6185635H02	6185635H02
Keyboard	-	AAYN4157A	AAYN4157A	AAYN4157A	AAYN4157A
Adhesive Kybrd	-	1185715J01	1185715J01	1185715J01	1185715J01
SW Array Domes	-	4086213P01	4086213P01	4086213P01	4086213P01

Battery Door, Slim	-	1586232P04	1586232P05	1586232P09	1586232P08
Battery Door, Standard	-	1586238P04	1586238P05	1586238P09	1586238P08
Battery Door, Extended	-	1586239P04	1586239P05	1586239P09	1586239P08

Kit Dao Unique		AAYN4152A	AAYN4152A	AAYN4152A	AAYN4152A
Keypad	-	7586228P03	7586228P03	7586228P03	7586228P03
Lens Assy	-	6186237P01	6186237P01	6186237P01	6186237P01

Xcvr Item Number		AAUG1065A	AAUG1066A	AAUG1067A	AAUG1068A

Product	-	Dao	Dao	Dao	Dao

Additional Info	-	CCKE	CCKE	CCKE	CCKE
Colour	-	Radar Blue	Platinum	Teal Green	Lilac

Make	-	Motorola	Motorola	Motorola	Motorola
System	-	GSM900/1800	GSM900/1800	GSM900/1800	GSM900/1800

Spare Xcvr Number	-	Not Available	Not Available	Not Available	Not Available
Spare PCB Number	-	Not Available	Not Available	Not Available	Not Available

Kit Flip-Front	-	AAHN5267A	AAHN5268A	AAHN5302A	AAHN5303A
Assy Front Hsg	-	0170293V02	0170293V03	0170293V05	0170293V04
Assy Flip		0170293U02	0170293U03	0170293U05	0170293U04
Hinge Mechanism	-	5504765Z06	5504765Z06	5504765Z06	5504765Z06
Speaker Earpc 15mm	-	5003880S01	5003880S01	5003880S01	5003880S01
Batt Li 3.3v Coin Cell	-	6003710K06	6003710K06	6003710K06	6003710K06
LCD Display 96x54	-	7202879Z66	7202879Z66	7202879Z66	7202879Z66
Pad Kramer	-	7585766G01	7585766G01	7585766G01	7585766G01
Assy Flip Bottom	-	0170293T02	0170293T03	0170293T05	0170293T04
Assy Flip Top	-	0170293S02	0170293S03	0170293S05	0170293S04
Pad Flip	-	7585719J01	7585719J01	7585719J01	7585719J01

Kit Back Hsg	-	AAYN4155A	AAYN4155A	AAYN4155A	AAYN4155A
Screw Internal Frnt Crick	-	0309147T03	0309147T03	0309147T03	0309147T03
Housing, Back	-	1586230P04	1586230P05	1586230P09	1586230P08
Button Mute	-	3886240P01	3886240P01	3886240P01	3886240P01
Spring Mechanical	-	4186254P01	4186254P01	4186254P01	4186254P01
Spring Compressions	-	4109378U01	4109378U01	4109378U01	4109378U01
Contact Vibrator P	-	3986250P01	3986250P01	3986250P01	3986250P01

Contact Vibrator N	-	3986251P01	3986251P01	3986251P01	3986251P01
Latch Battery	-	5509377U01	5509377U01	5509377U01	5509377U01
Motor Assy, Vibrator	-	0186264P01	0186264P01	0186264P01	0186264P01

Kit Back End Common	-	AAHN5275A	AAHN5275A	AAHN5275A	AAHN5275A
Antenna Assy	-	0186226P01	0186226P01	0186226P01	0186226P01
Grommet Microphone	-	0585699J01	0585699J01	0585699J01	0585699J01
Antenna Insert	-	4385988H02	4385988H02	4385988H02	4385988H02
Mic 6mm	-	5009135L07	5009135L07	5009135L07	5009135L07
Light Guide Main	-	6185635H02	6185635H02	6185635H02	6185635H02

Keyboard	-	AAYN4157A	AAYN4157A	AAYN4157A	AAYN4157A
Adhesive Kybrd	-	1185715J01	1185715J01	1185715J01	1185715J01
SW Array Domes	-	4086213P01	4086213P01	4086213P01	4086213P01

Battery Door, Slim	-	1586232P04	1586232P05	1586232P09	1586232P08
Battery Door, Standard	-	1586238P04	1586238P05	1586238P09	1586238P08
Battery Door, Extended	-	1586239P04	1586239P05	1586239P09	1586239P08

Kit Dao Unique		AAYN4151A	AAYN4151A	AAYN4151A	AAYN4151A
Keypad	-	7586228P04	7586228P04	7586228P04	7586228P04
Lens Assy	-	6186237P01	6186237P01	6186237P01	6186237P01

SECTION 5: SIM CARDS AND SECURITY

5.1 Manual Test Mode

The GSM Motorola V8088 is equipped with a manual test mode capability. This capability allows service personnel to take control of the unit, and by entering certain keypad commands, make the unit performs desired functions.

To enter the manual test command mode, a GSM / DCS test sim (Part No 8102430Z04) must be used. The test sim is inserted into the SIM slot beneath the battery (See **figure 6.1**), the battery should then be re-inserted and the unit powered on. The # button should then be pressed for approximatly 3 second until 'test' appears on the display, and the correct commands must then be followed.

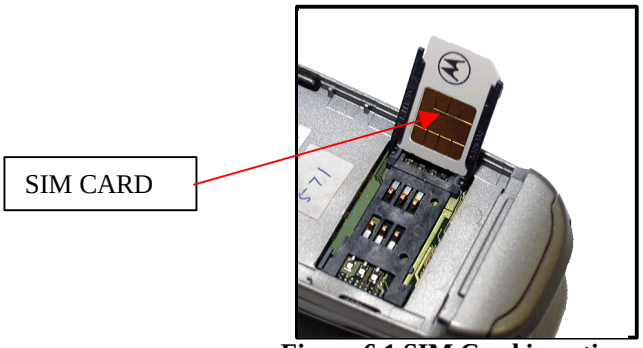


Figure 6.1 SIM Card insertion

5.2 Live Sim Card

A SIM (Subscriber Identity module) card will be required to access the existing local GSM / DCS / PCS cellular network, or remote networks when travelling. (If the roaming agreement has been made with the provider.)
The SIM card contains all the data necessary to access GSM services, and also:

- The ability to store user information such as phone numbers etc…
- All information required by the network provider to provide use to the network

5.3 Personality Transfer

5.3.1 Introduction

Personality Transfers are required when a phone is Express Exchanged or when the main board is replaced. The reason for personality transfers are to reproduce the customer's original personalized details such as menu and stored memory such as phone books etc… or even just to program a unit with basic user information such as language selection. There are two possible methods of transferring this information from unit to unit, or with a master transfer, card to unit: -

• **Normal Transfer** is used when the customer's original unit still powers up and as discussed above the customers personalized menu selections etc… are required to be transferred to the replacement unit.

• **Master Transfer** is used when the faulty unit will not power up and the transfer is used to configure the replacement board to a set standard.

Below is the procedure to set up a Master Transfer Card and to carry out each method of transfer correctly.

5.3.2 Normal Transfer

1. Insert transfer card into 'Donor' Unit. Turn unit on till 'Clone' appears.
2. Enter **021#** to upload first block of data. 'Please wait' will be displayed.
3. Remove card.

4. Insert card into replacement unit, or unit with new main RF / Logic PCB.
5. Turn unit on wait till ‘Clone’ appears.
6. Enter **03#** ‘Please wait’ will be displayed while data is transferred.
7. Repeat steps 1 – 6 but enter **022#** at step 2 to transfer data on to Clone card.
8. Repeat steps 1 – 6 but enter **025#** at step 2 to transfer data on to Clone card.

5.3.3 Master SIM Card Creation

1. Insert transfer card into a unit with the desired setup Pwr on and wait till unit displays ‘Clone’
2. Enter **024#** to copy unit ‘personality’ onto card. ‘Please wait’ will be displayed
3. Master Transfer card is created.

5.3.4 Master Transfer

1. Insert Master Transfer Card (explained above) into replacement unit. Pwr on and wait till unit displays ‘Clone’
2. Enter **03#** to download data into replacement unit. Please wait will be displayed.
3. When ‘Clone’ reappears download is completed.

5.4 GSM Test Commands

This is a list of Level 1 and 2 Test commands available to V8088

Table 6.1 Test commands	***Test Function/Name***
#(hold down for 2 seconds)	Enter manual test mode
01#	Exit manual test mode
07x#	Mute RX audio path
08#	Unmute RX audio path
09#	Mute TX audio path
10#	Unmute TX audio path
15x#	Generate tone
16#	Mute tone generator
19#	Display S/W version number of Call Processor
20#	Display S/W version number of Modem
36#	Initiate acoustic loopback
37#	Stop test
38#	Activate Mini SIM
39#	Deactivate Mini SIM
43x#	Change audio path
47x#	Set audio volume
51#	Enable sidetone
52#	Disable sidetone
57#	Initialize non-volatile memory
58#	Display security code
58xxxxxx#	Modify security code
59#	Display lock code
59xxx#	Modify lock code
60#	Display IMEI
99#	Display all display pixels

15XX#

90#	Vibrator
91#	Ringer

36XX#

0 or Omitted	Full Rate
1	Enhanced Full rate
2	Half Rate

98XX#

20#	GSM 1800
21#	GSM 900
23#	Dual Band 900 / 1800

56X#

0#	Turn Off any visual Alert if On
1#	Turn on Green LED
2#	Turn on Red LED
3#	Turn on Yellow LED
4#	Flash Green LED
5#	Flash Red LED
6#	Flash Yellow LED

5.5 Identity and Security

Each Motorola GSM Cellular Cassette will be labelled with various number configurations. The following information describes what these configurations mean.

MSN
The mechanical Serial Number (MSN) is an individual unit identity number and will remain with the unit throughout the life of the unit.
The MSN can be used to log and track a unit on Motorola's EPPRS system.
The MSN is divided into 4 sections.

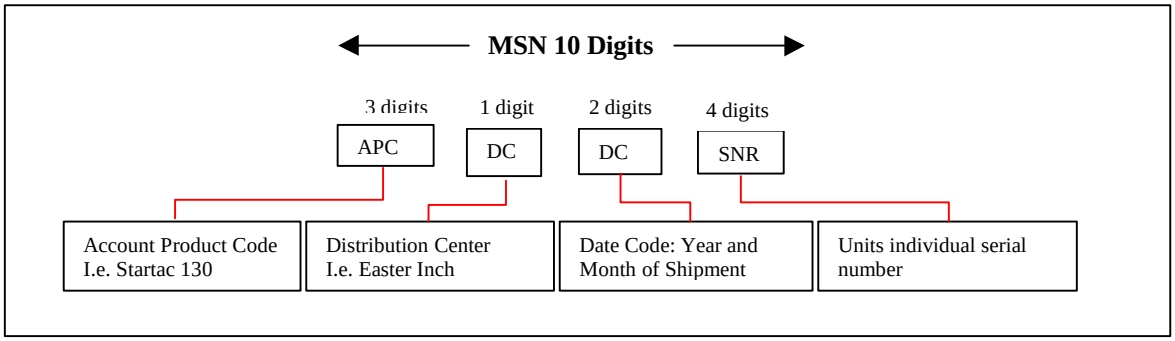


Figure 5.2 MSN label breakdown

IMEI
The International Mobile station Equipment Identity (IMEI) number is an individual number unique to the PCB and is stored within the unit's memory. The following figure gives a description of the make up of this number.

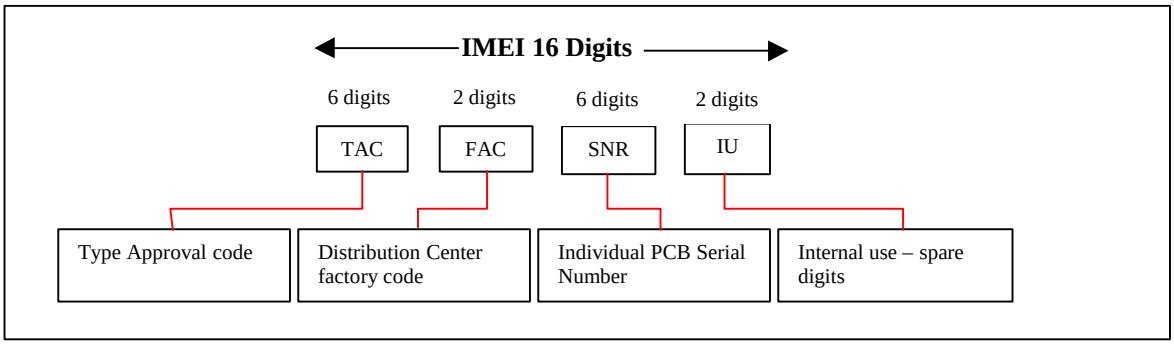


Figure 5.3 IMEI label breakdown

Some other label number configurations that will be present will be: -

XCVR NUMBER: Identifies type of product. i.e. V8088 (Usually SWF number)

PACKAGE NUMBER: Determines type of equipment, mode in which it was shipped and language with which it was shipped.

SECTION 6: REPAIR AND TEST PROCEDURES

6.1 Repair Introduction

The V8088 is divided into 4 main sections when it comes to part replacability: The flip which contains the display module and speaker, the mechanical parts, the keypad PCB and the main RF / Logic PCB. If the RF / Logic board is required to be changed then a full service tranceiver should be ordered as there is no replacement PCB available. Also a personality transfer would be necessary.

6.2 Mechanical repairs

Assembly replacement level troubleshooting and repair of the V8088 is limited to isolation and replacement of the main mechanical parts only (See Exploded parts diagram and associated parts list)

6.3 Basic Modular Troubleshooting

The troubleshooting information in **Table 2** shows some typical malfunction symptoms, and for the corresponding verification and repair procedures refer to the disassembly instructions located in the disassembly section of this manual. **(Section 5).**

NOTE

Defective Logic/RF assemblies must be replaced with pre-tested, pre-phased assemblies

Repair Chart

Table 2. GSM V8088 Cellular Telephone: Troubleshooting and Repair Chart. (Assembly Replacement Level).

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
Personal telephone will not turn on or stay on	a) Battery pack either discharged or defective	Measure battery voltage across a 50 ohm (>1 Watt) load. If the battery voltage is <3.25 V dc, recharge the battery using the appropriate battery charger. If the battery will not recharge, replace the battery. If battery is not at fault, proceed to b.
	b) Battery connectors open or misaligned.	Visually inspect the battery connectors on both the battery assembly and the portable telephone. Re-align and, if necessary, replace either the Battery or the battery connector assembly. Removing the battery connector assembly has to be done with extreme care to avoid damaging the PCB. If battery connectors are not at fault, proceed to c
	c) Logic/RF Board Assembly Defective.	Remove the Logic/RF Assembly. Substitute a known good assembly and temporarily reassemble the unit. Depress the **PWR** button; if unit turns on and stays on, disconnect the dc power source and reassemble the telephone with the new Logic/RF Board assembly. Verify that the fault has been cleared. If the fault has not been cleared then proceed to d.
	d) Keypad circuit board Failure.	Replace the Keypad board. Temporarily connect a +3.6 V dc supply to the battery connectors Depress the **PWR** button; if unit turns on and stays on, disconnect the dc power source and reassemble the telephone with the new Keypad board. If the fault is not cleared then proceed to e.
	e) Display circuit failure	Disassemble unit and insert Main RF / Logic PCB into new front Hsng with Flip. Inset Battery and depress **PWR** button. Ensure unit stays on, if OK reassemble unit in new housing assembly
2. Personal telephone exhibits poor reception and/or erratic operation (such as calls frequently dropping, Weak and/or distorted audio, etc.).	a) Antenna is defective	Check to make sure that the antenna pin is properly connected to the Logic/ RF assembly. If OK, substitute a known good antenna. If the fault is still Present, proceed to b.
	b) Logic/RF Board Assembly Defective.	Replace Logic/RF Assembly (refer to symptom 1c). Verify that the fault has been cleared and Re-assemble the unit with the new PCB.
3. Display is erratic, or provides Partial or no display.	a) Mating connections to / from Display board faulty.	Remove rear housing from unit, check general condition of flex connector if OK check that the Zif connector is fully pressed down and that the flex collars are flush with the plastic of the connector.If not check Zif to PCB connections, if faulty connector, replace RF / Logic PCB. If Ok proceed to b.
	b) Display board is Defective.	Substitute the good RF / Logic PCB into a known good front Hsng /Flip (with good Display circuit board), if the fault is cleared rebuild with new Hsng / Flip Assy. If the fault is not cleared, re-install into the original front Hsng / Flip Assy and proceed to c.

SYMPTOM	PROBABLE CAUSE	VERIFICATION AND REMEDY
	c) Logic/RF Board Assembly	Replace Logic/RF Assembly (refer to symptom 1c).

	Defective.	Verify that the fault has been cleared and Re-assemble the unit with the new PCB.
4. Incoming calls alert transducer audio distorted or volume is too low.	a) Faulty alert Transducer / Main RF / Logic PCB defective	Replace Logic/RF Board Assembly (refer to symptom 1c). Verify that the fault has been cleared and re-assemble the unit with the new PCB.
5. Personal telephone transmit audio is weak, (usually indicated by called parties complaining of difficulty in hearing voice from personal phone).	a) Microphone connections to The main RF / Logic board are defective.	Gain access to the Microphone as described in the DISASSEMBLY instructions in this manual. . Check connections. If connector is faulty proceed to c if the connector is OK, proceed to b.
	b) Microphone defective	Gain access to microphone .Disconnect and substitute a known good Microphone. Place a call and verify improvement in portable transmit signal as heard by called party. If good, re-assemble portable with new Microphone. If Microphone is not at fault, re-install original Microphone and proceed to c.
	c) Logic/RF Board Assembly defective.	Replace Logic/RF Board Assembly (refer to symptom 1c). Verify that the fault has been cleared and re-assemble the unit with the new PCB.
6. Personal telephone receive audio is weak and/or distorted. (From speaker)	a) Connections to/from Logic/RF Circuit board defective.	Gain access to Logic/RF board as described in the DISASSEMBLY instructions in this manual. Check connection and the flexistrip from the earpiece to the Logic/RF circuit board. If flex is at fault then replace front / flip Assy. If Zif connector is at fault proceed to d. If connection is not at fault, Proceed to b.
	b) Earpiece Speaker defective.	Remove RF / Logic PCB from housing and insert into known good housing with flip, ensure good flex connection. Place a call and verify improvement in earpiece audio. If better, reassemble the phone with the good Hsng. If it was no better then re-install into the original housings and proceed to c.
	c) Antenna assembly is defective.	Attempt a re-phasing of the unit and recheck the symptom. If symptom is the same but unit re-phases correctly, check to make sure the two antenna Connector is correctly soldered to the main board and that the antenna is fitted correctly. If ok, substitute a known good antenna assembly. If this does not cure the fault, re-install the original assembly then proceed to d.
	d) Logic/RF Board Assembly Defective.	d) Replace Logic/RF Assembly (refer to symptom 1c). Verify that the fault has been cleared and Re-assemble the unit with the new PCB.
7. Personal telephone will not recognize/accept SIM card	a) SIM card defective	Initially check that the contacts on the card are not dirty. Clean if necessary, and check if fault has been eliminated. If the contacts are clean, insert a Known good SIM card into the portable telephone. Power up the unit and confirm whether or not the card has been accepted. If the fault no longer Exists, the defective SIM card should be replaced. If the SIM card is not at fault, proceed to b.

SYMPTOM	**PROBABLE CAUSE**	**VERIFICATION AND REMEDY**
	b) Logic/RF Board Assembly Defective.	Replace Logic/RF Board Assembly (refer to symptom 1c). Verify that the fault has been cleared and re-assemble the unit with the new PCB.
8. Phone does not sense when flip is Opened or closed (usually indicated by inability to answer incoming calls by opening the flip, or inability to make outgoing calls).	a) Magnet in flip defective	Replace Front / flip assembly with known good one refer to the DISASSEMBLY instructions in this manual. Place call to portable phone and verify ability to answer by opening flip. If faulty rebuild phone with new front / flip Assy. If fault is still present, replace original flip assembly and proceed to b.
	b) Reed Switch defective	Gain access to Keypad board as described in the DISASSEMBLY instructions in this manual.

		Unsolder the reed switch and replace with a known good one. Reassemble unit. Place call to portable phone and verify ability to answer by opening flip. If fault still present, replace original reed switch and proceed to c.
	c) Keypad board is Defective.	Replace the Keypad board with a known good one. Place call to portable phone and verify that the fault has been eliminated. If not at fault, proceed to d.
	d) Logic/RF Board Assembly Defective.	Replace Logic/RF Board Assembly (refer to symptom 1c). Verify that the Fault has been cleared and re-assembles the unit with the new PCB.
9. Vibrator feature not functioning	a) Vibrator defective	Replace vibrator. If fault still present, replace original vibrator motor and proceed to b.
	b) Logic/RF Board Assembly Defective.	Replace Logic/RF Board Assembly (refer to symptom 1c). Verify that the Fault has been cleared and re-assembles the unit with the new PCB.
10. Internal Charger not working	a) Faulty charger circuit on main Board.	Test a selection of batteries in the rear pocket of the desktop charger. Check LED display for the charging indications. If these are charging ok, then the internal charger is at fault. Replace Logic/RF Board Assembly (refer to symptom 1c). Verify that the Fault has been cleared and re-assembles the unit with the new PCB.
11. Real Time Clock resetting when standard battery is removed.	Lithium button cell in the Flip may be depleted.	Remove RF / Logic PCB from housing and insert into known good housing with flip, ensure good flex connection. Check RTC time does not reset If Ok, rebuild with good housing. If fault is still present then replace front / flip Assy.
12. No / Weak audio when using headset	a) Headset not fully pushed home	Fully ensure the 'click' is felt on the jack socket.
	b) Faulty Jack Socket / Defective PCB	Replace Logic/RF Board Assembly (refer to symptom 1c). Verify that the fault has been cleared and re-assemble the unit with the new PCB.

6.4 Software Upgrade

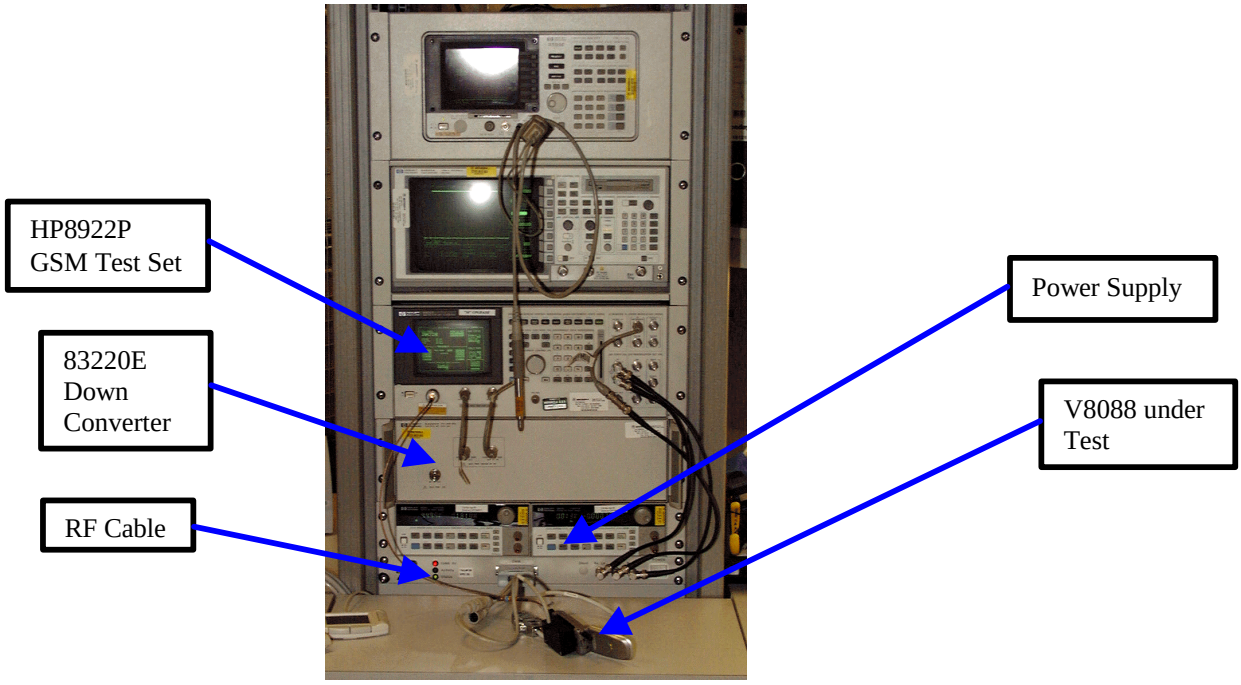
For information on setting up and equipment required for the flashing of software, contact should be made with the local technical support engineer.
Flashing must take place using the Emmi2D box.

6.5 Flexing

For information on setting up and equipment for flexing, contact should be made with the local technical support engineer.

6.6 Testing on HP8922

NB* To test the PCB on its own without a housing or SIM card the unit must first be put into test mode and then into Tx or Rx mode using the applicable manual test commands. Ensure that a battery is present during this, as the battery acts as a SIM card presence detect for the unit. The PCB can then be taken out of the housing for any analysis.



SECTION 7: ACCESSORIES

7.1 Introduction:

These part numbers were correct as of the 12 July 99 and may be subject to change

The V8088 is compatible with all existing V3688 / V998 current accessories

Part number	Name	Remarks
Battery		
SNN5495A	V998 500mAh Slim Li Chinese Label	PRC
SNN5496A	V998 900mAh Thick Li, Chinese Label	PRC
SNN5497A	V998 500mAh NiMH, Chinese Label	PRC
SNN5435B	V998 500mAh Slim Li	
SNN5451B	V998 900mAh Thick Li	
SNN5341A	V998 500mAh NiMH	
Charger		
SPN4654	Power Adapter (Travel Charger) - PRC	PRC
SPN4604	Power Adapter (Travel Charger) - TWN	TWN
SPN4659	Power Adapter (Travel Charger) - HK	HK
SYN4241	Cigarette Lighter Adapter	
Car Kit		
S8464A	Zero Install Car kit w/DSP & VR (Kramer)	
Headset		
SYN6962	Boom Headset	

7.2 S–Package Numbers

Teal Green:

TITLE/DESCRIPTION	S – Model Number
GSM 900/1800 V8088 (Dao), Australia TLGRN ENG	SA1552AG4B1
GSM 900/1800 V8088 (Dao), Euro Plug 1 TLGRN ENG	SA1553AG4B1
(Thailand, Vietnam, Indonesia, Sri Lanka, Cambodia, Laos)	
GSM 900/1800 V8088 (Dao), Euro Plug 2 TLGRN ENG	SA1554AG4B1
(Philippines, Brunei, Bangladesh)	
GSM 900/1800 V8088 (Dao), India TLGRN ENG	SA1555AG4B1
GSM 900/1800 V8088 (Dao), Thailand TL GRN ENG	SA1556AG4B1
(SIM Lock to AIS operator)	
GSM 900/1800 V8088 (Dao), Thailand TLGRN ENG	SA1563AG4B1
(SIM Lock to TAC operator)	
GSM 900/1800 V8088 (Dao), Singapore TLGRN ENG	SA1557AG4B1
GSM 900/1800 V8088 (Dao), Plain Pkg TLGRN ENG	SA1558AG4B1
GSM 900/1800 V8088 (Dao), Philippines TLGRN ENG	SA1559AG4B1
GSM 900/1800 V8088 (Dao), New Zealand TLGRN ENG	SA1560AG4B1

Lilac

TITLE/DESCRIPTION	S- Model Number
GSM 900/1800 V8088 (Dao), Australia LILAC ENG	SA1552AF4B1
GSM 900/1800 V8088 (Dao), Euro Plug 1 LILAC ENG	SA1553AF4B1
(Thailand, Vietnam, Indonesia, Sri Lanka, Cambodia, Laos)	
GSM 900/1800 V8088 (Dao), Euro Plug 2 LILAC ENG	SA1554AF4B1
(Philippines, Brunei, Bangladesh)	
GSM 900/1800 V8088 (Dao), India LILAC ENG	SA1555AF4B1
GSM 900/1800 V8088 (Dao), Thailand LILAC ENG	SA1556AF4B1
(SIM Lock to AIS operator)	
GSM 900/1800 V8088 (Dao), Thailand LILAC ENG	SA1563AF4B1
(SIM Lock to TAC operator)	
GSM 900/1800 V8088 (Dao), Singapore LILAC ENG	SA1557AF4B1
GSM 900/1800 V8088 (Dao), Plain Pkg LILAC ENG	SA1558AF4B1
GSM 900/1800 V8088 (Dao), Philippines LILAC ENG	SA1559AF4B1

GSM 900/1800 V8088 (Dao), New Zealand LILAC ENG	SA1560AF4B1

Radar Blue

TITLE/DESCRIPTION	S - Model Numbers
GSM 900/1800 V8088 (Dao), Australia RDRBL ENG	SA1552AP3B1
GSM 900/1800 V8088 (Dao), Euro Plug 1 RDRBL ENG	SA1553AP3B1
(Thailand, Vietnam, Indonesia, Sri Lanka, Cambodia, Laos)	
GSM 900/1800 V8088 (Dao), Euro Plug 2 RDRBL ENG	SA1554AP3B1
(Philippines, Brunei, Bangladesh)	
GSM 900/1800 V8088 (Dao), India RDRBL ENG	SA1555AP3B1
GSM 900/1800 V8088 (Dao), Thailand RDRBL ENG	SA1556AP3B1
(SIM Lock to AIS operator)	
GSM 900/1800 V8088 (Dao), Thailand RDRBL ENG	SA1563AP3B1
(SIM Lock to TAC operator)	
GSM 900/1800 V8088 (Dao), Singapore RDRBL ENG	SA1557AP3B1
GSM 900/1800 V8088 (Dao), Plain Pkg RDRBL ENG	SA1558AP3B1
GSM 900/1800 V8088 (Dao), Philippines RDRBL ENG	SA1559AP3B1
GSM 900/1800 V8088 (Dao), New Zealand RDRBL ENG	SA1560AP3B1

Platinum

TITLE/DESCRIPTION	S – Model Numbers
GSM 900/1800 V8088 (Dao), Australia PLAT ENG	SA1552AW3B1
GSM 900/1800 V8088 (Dao), Euro Plug 1 PLAT ENG	SA1553AW3B1
(Thailand, Vietnam, Indonesia, Sri Lanka, Cambodia, Laos)	
GSM 900/1800 V8088 (Dao), Euro Plug 2 PLAT ENG	SA1554AW3B1
(Philippines, Brunei, Bangladesh)	
GSM 900/1800 V8088 (Dao), India PLAT ENG	SA1555AW3B1
GSM 900/1800 V8088 (Dao), Thailand PLAT ENG	SA1556AW3B1
(SIM Lock to AIS operator)	
GSM 900/1800 V8088 (Dao), Thailand PLAT ENG	SA1563AW3B1
(SIM Lock to TAC operator)	
GSM 900/1800 V8088 (Dao), Singapore PLAT ENG	SA1557AW3B1
GSM 900/1800 V8088 (Dao), Plain Pkg PLAT ENG	SA1558AW3B1
GSM 900/1800 V8088 (Dao), Philippines PLAT ENG	SA1559AW3B1

GSM 900/1800 V8088 (Dao), New Zealand PLAT ENG	SA1560AW3B1

SECTION 8: GLOSSARY OF TERMS

8.1 List of Abbreviations

Those marked ** are Motorola specific abbreviations.

µBGA	Micro Ball Grid Array
A Interface	Interface between MSC and BSS
A3	Authentication algorithm
A5	Stream cipher algorithm
A8	ciphering key generating algorithm
AB	Access Burst
A-bis	Interface between BSC and BTS
ACCH	Associated Control Channel
ACSE	Association Control Service Element
AGCH	Access Grant Channel
AMPS	Advance Mobile Phone System
AOC	Advice of charge
ARFCN	Absolute Radio Frequency Channel Number
ARQ	Automatic Request for retransmission
ASIC	Application Specific Integrated Circuit
AUC	Authentication Center
AUT (H)	Authentication
BA	BCCH Allocation
BAIC	Barring of All Incoming Calls
BAOC	barring of all Outgoing Calls
BCC	Base Transceiver Station (BTS) Color Code
BCCH	Broadcast Control Channel
BCD	Binary Coded Decimal
BGA	Ball Grid Array
BCU	BTS Control Unit **
Bm	Full-rate traffic channel
BN	Bit Number
BS	Base Station
BSC	Base Station Controller
BSIC	Base Transceiver Station Identity Code
BSS	Base Station System
BSSAP	BSS Application Part (DTAP and BSSMAP)
BSSC	Base Station System Control Cabinet **
BSSMAP	Base Station Systems Management Application Part
BSSOMAP	BSS Operation and Maintenance Application Part
BSU	Base Site Controller Unit **
BTS	Base Transceiver Station
CA	Call Allocation
CBCH	Call Broadcast Channel
cc	Call Control
cc	Country Code
CC	Cellular Cassette
CCBS	Completion of Calls to Busy Subscribers
CCH	Control Channel
CCCH	Common Control Channel
CDMA	Code Division Multiple Access
CFS	Call Forwarding on mobile Subscriber busy
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction

CM	Connection Management
COLP	Connected Line identification Presentation
COLR	Connected Line identification Restriction
CONF	Conference Call add on
CSPDN	Circuit Switched Public Data Network
CUG	Closed User Group
CW	Call Waiting
DB	Dummy Burst
DBS	Distributed Base Station **
DCCH	Dedicated Control Channel
DET	Detach
DFE	Decision Feedback Equalizer
DISC	Disconnect
DL	Data Link (layer)
Dm	Control Channel (ISDN terminology applied to mobile service)
Dm	Signaling channel
Dp	Dialed Pulse
DRCU	Diversity Radio Channel Unit**
DRX	Discontinuous Reception
DTAP	Direct Transfer Application Part
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi-Frequency (tone signaling type)
DTX	Discontinuous Transmission
E	erlang
Eb/No	Energy per Bit/Noise floor
EC	Echo Canceller
Ec/No	Ratio of energy per modulating bit to the noise spectral density
EGSM	Extended Group special Mobile
EFR	Enhanced Full Rate
EIR	Equipment Identity Register
EIRP	Effective Isotropic Radiated Power
EMC	Electromagnetic Compatibility
EMX	Electronic Mobile Exchange **
ETSI	European Telecommunications Standards Institute
FACCH	Fast Associated Control channel
FACCH/F	Full rate Fast Associated Control channel
FACCH/H	Half rate fast Associated Control channel
FB	Frequency correction burst
FCCH	Frequency Correction Channel
FEC	Forward Error Correction
FN	Frame Number
FR	Full Rate
FTAM	File Transfer Access Management
GCC	Global Call Center
GMSC	Gateway Mobile Services Switching Center
GMSK	Gaussian Minimum Shift Keying
GSM	Group Special Mobile
GSM MS	GSM Mobile Station
GSM PLMN	GSM Public Land Mobile Network
HANDO	Handover
HATIS	Hearing Aid Telephone Interconnection System
HDLC	High Level Data Link Control
HLR	Home Location Register
HOLD	Call Hold (Supplementary Service)

HPLMN	Home PLMN
HPU	Hand Portable Unit
HR	Half Rate
HSN	Hopping Sequence Number
I	Information (frames)
IA5	International Alphanumeric 5
ID	Identification
IMEI	International Mobile Equipment Identity
IMM	Immediate assignment message
IMSI	International Mobile Subscriber Identity
IN	Intelligent Network
INDY	Iridium 9500 handset
IrDA	Infra Red Data Association
ISC	International Switching Center
ISU	Iridium Subscriber Unit
ISDN	Integrated Services Digital Network
ISUP	ISDN User Part
IWF	Interworking Function
Kc	ciphering Key
Ki	Individual subscriber authentication key
LAC	Location Area Code
LAI	Location Area Identification (Identity)
LAPB	Link Access Procedure ‘B’ (balanced) channel
LAPDm	Link Access Procedure ‘DM’ (mobile ‘D’) channel
Lm	Traffic channel (with capacity lower than Bm)
LPC	Linear Predictive Code
LR	Location Register
MA	Mobile Allocation
MAH	Mobile Access Hunting
MAI	Mobile Allocation Index
MAIO	Mobile Allocation Index Offset
MAP	Mobile Application Part
MCC	Mobile Country Code
MCI	Malicious Call Identification
MD	Mediation Device
ME	Mobile Equipment
MF	Multi-Frequency (tone signaling type)
MLSE	Maximum Likelihood Sequence Estimator
MM	Mobility Management
MMI	Man Machine Interface
MNC	Mobile Network Code
MO	Mobile Originated
MO/PP	Mobile Originated Point to Point messages
MoU	Memorandum of Understanding
MRN	Mobile Roaming Number
MS	Mobile Station
MSC	Mobile Services Switching Center
MSCM	Mobile Station Class Mark
MSIN	Mobile Station Identification Number
MSISDN	Mobile Station international ISDN number
MSRN	Mobile Station Roaming Number
MT	Mobile Termination
MTP	Message Transfer Part
MT/PP	Mobile Terminated Point to Point messages

NAMPS	North American-Advance Mobile Phone System
NB	Normal Burst
NE	Network Elements
NET	Norme European de Telecommunications
NM	Network Management
NHC	Network Management Center
O&M	Operations and Maintenance
OACSU	Off Air Call Set-Up
OCB	Outgoing Calls Barred
OMAP	Operations and Maintenance Application Part (previously was OAMP)
OMC	Operations and Maintenance Center
OMCR	Operations and Maintenance Center -Radio Part
OMCS	Operations and Maintenance Center -Switch Part
OSI	Open System Interconnection
PAD	Packet Assembly Disassembly facility
PCH	Paging Channel
PDN	Public Data Networks
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
POTS	Plain Old Telephone Service (basic telephone services)
PSPDN	Public Switched Packet Data Network
PSTN	Public Switched Telephone
PTO	Public Telecommunications Operator
QOS	Quality of Service
RAB	Random Access Burst
RACH	Random Access Channel
RBDS	Remote BSS Diagnostic Subsystem **
RBU	Remote Base Station Unit (PCN) **
RCU	Radio Channel Unit **
REC	Recommendation
REL	Release
RELP-LTP	Regular Pulse Excitation - Long Term Prediction
REQ	Request
RFCH	Radio Frequency Channel
RFN	Reduced TDMA Frame Number
RLP	Radio Link Protocol
ROSE	Remote Operations Service Element (a CCITT specification for O&M)
RXCDR	Remote Transcoder Unit **
RXLEV	Received signal level
RXQUAL	Received signal quality
SABM	Set Asynchronous Balance Model
SACCH	Slow Associated Control Channel
SAPI	Service Access Point Indicator (Identifier)
SB	Synchronization Burst
SC	Service Center
SCCP	Signaling Connection Control Part
SCH	Synchronization Channel
SCP	Service Control Point - an intelligent network entity
SDCCH	Stand-alone Dedicated Control Channel
SDL	Specification Description Language
SFH	Slow Frequency Hopping
SIM	Subscriber Identity Module

SMS	Short Message Service
SMSCB	Short Message Service Call Broadcast
SND	SeND
SP	Signaling Point
SRES	Signed RESponse (authentication)
SS	Supplementary Service
SS	System Simulator
STP	Signaling Transfer Point
SYSGEN	SYStem GENeration
TA	Terminal Adapter
TA	Timing Advance
TCAP	Transaction Capabilities Application Part
TCH	Traffic Channel
TCH/F	A full rate TCH
TCH/FS	A full rate speech TCH
TCH/HS	A half rate speech TCH
TCP	Transmission Control Protocol
TDMA	Time Division Multiple Access
TE	Terminal Equipment
TMN	Telecommunications Management Network
TMSI	Temporary Mobile Subscriber Identity
TN	Timeslot Number
TRX	Transceivers
TTY	TeleTYpe (refers to any terminal)
TS	Time Slot
TUP	Telephone Users Part
UI	Unnumbered Information frame
Um	Air Interface
USSD	Unstructured Supplementary Services Data
VAD	Voice Activity Detection
VLR	Visited Location Register
VLSI	Very Large Scale Integration (IC)
VPLMN	Visited PLMN
WAP	Wireless Application Protocol
XC	Transcoder
XCDR	Transcoder **
3PTY	Three party service

SECTION 9: NEW SALES MODELS

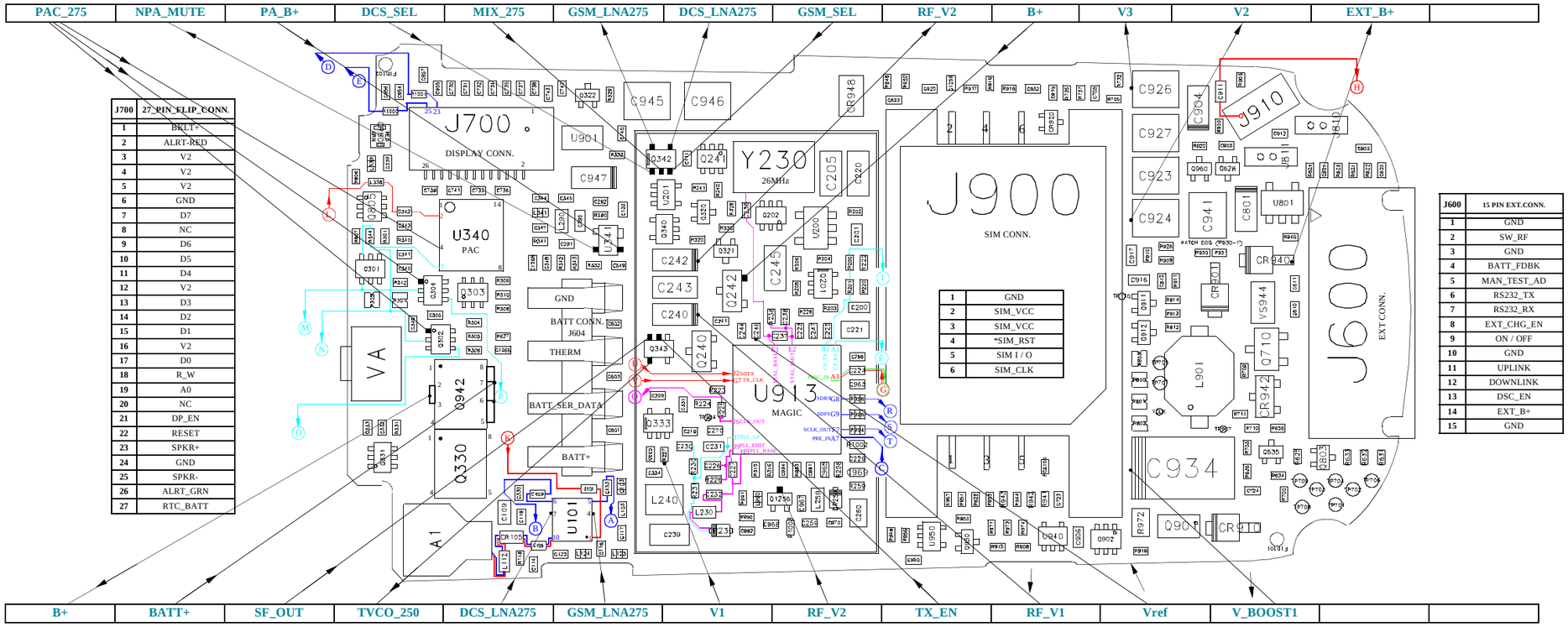
9.1 List of New Model Releases as of Launch date

AAUG1057A	Dao	Radar Blue	English
AAHN1058A	Dao	Platinum	English
AAUG1059A	Dao	Teal Green	English
AAUG1060A	Dao	Lilac	English
AAUG1061A	Dao	Radar Blue	SCKE
AAUG1062A	Dao	Platinum	SCKE
AAUG1063A	Dao	Teal Green	SCKE
AAUG1064A	Dao	Lilac	SCKE
AAUG1065A	Dao	Radar Blue	CCKE
AAUG1066A	Dao	Platinum	CCKE
AAUG1067A	Dao	Teal Green	CCKE
AAUG1068A	Dao	Lilac	CCKE

DualBand DAO (V8088)_8486183p01

GSM Service Support
Level 3 Authorized

PAC_275	NPA_MUTE	PA_B+	DCS_SEL	MIX_275	GSM_LNA275	DCS_LNA275	GSM_SEL	RF_V2	B+	V3	V2	EXT_B+	



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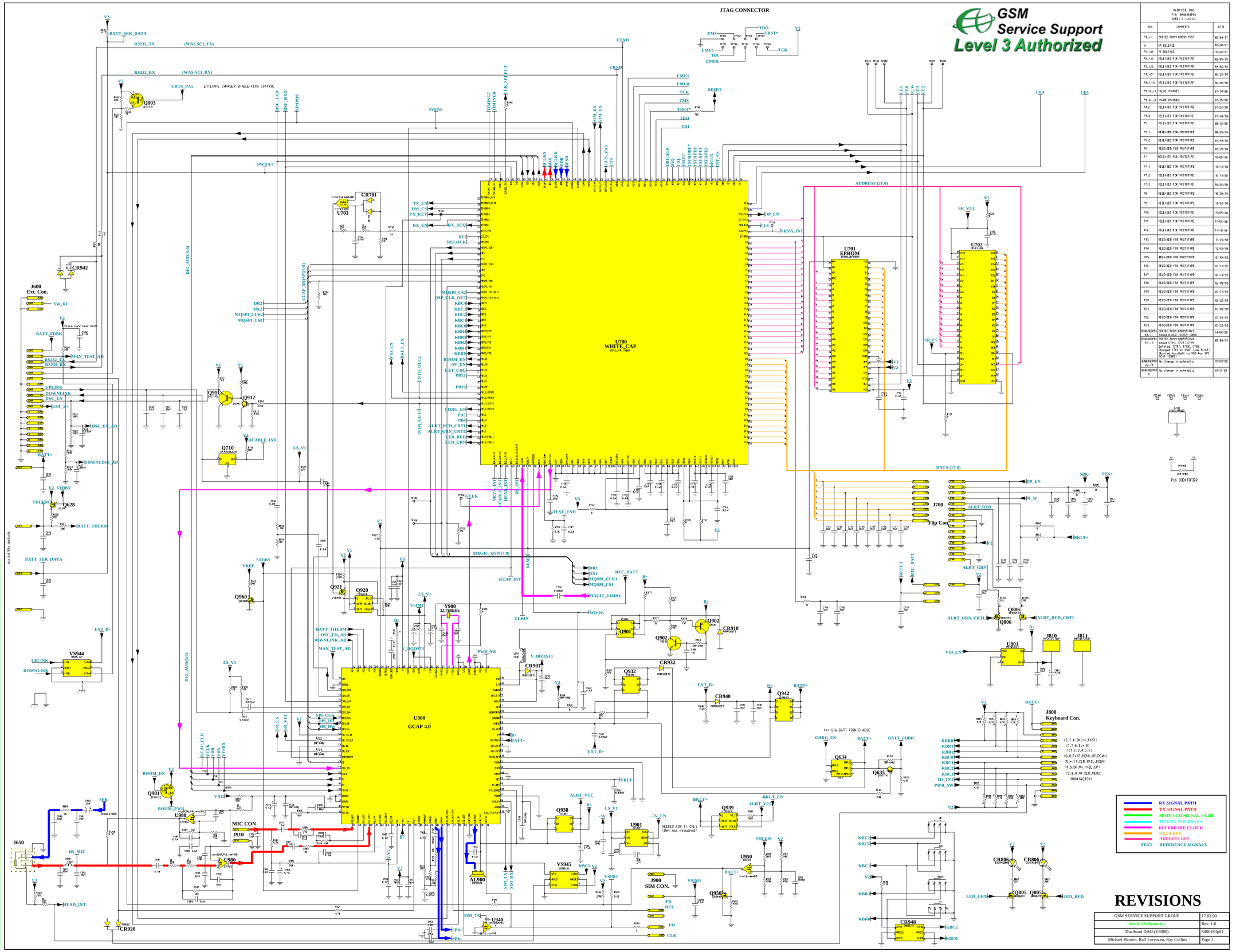

REVISIONS

GSM SERVICE SUPPORT GROUP	17.02.00
Level 3 Schematics	Rev. 1.0
Dualband DAO (V8088)	8486183p01
Michael Hansen, Ralf Lorenzen, Ray Collins	Page 1

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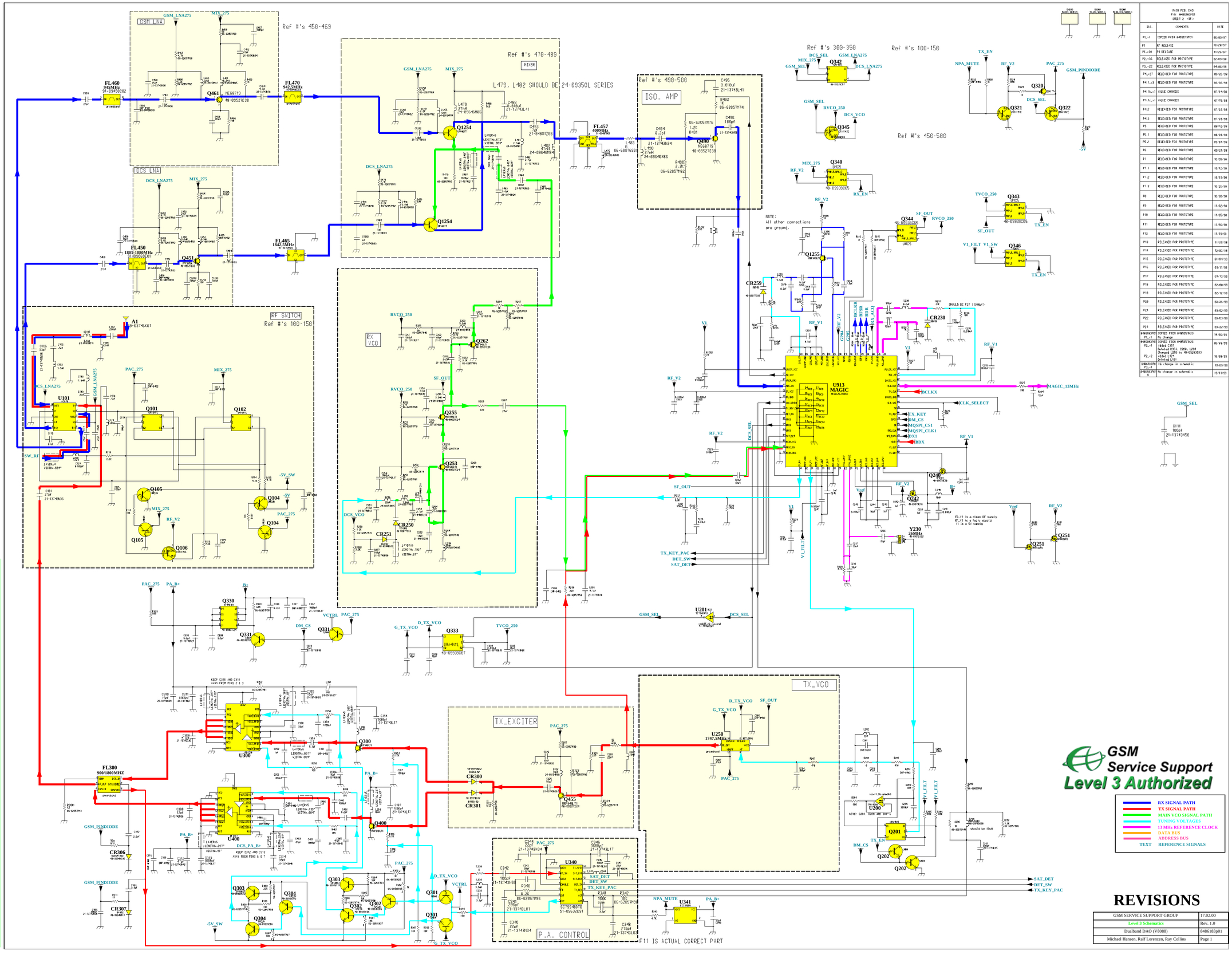

DES.	COMMENTS	DATE
P1_-1	COPIED FROM 8486183P01	05-09-97
P1	RF RELEASE	10-29-97
P1_-20	P1 RELEASE	11-25-97
P2_-26	RELEASED FOR PROTOTYPE	02-09-98
P3_-22	RELEASED FOR PROTOTYPE	04-06-98
P4_-27	RELEASED FOR PROTOTYPE	05-25-98
P4.1_-3	RELEASED FOR PROTOTYPE	06-30-98
P4.1A_-1	VALUE CHANGES	07-14-98
P4.1c_-1	VALUE CHANGES	07-15-98
P4.2	RELEASED FOR PROTOTYPE	07-22-98
P4.3	RELEASED FOR PROTOTYPE	07-28-98
P5	RELEASED FOR PROTOTYPE	08-12-98
P5.1	RELEASED FOR PROTOTYPE	08-28-98
P5.2	RELEASED FOR PROTOTYPE	09-04-98
P6	RELEASED FOR PROTOTYPE	09-21-98
P7	RELEASED FOR PROTOTYPE	10-05-98
P7.1	RELEASED FOR PROTOTYPE	10-12-98
P7.2	RELEASED FOR PROTOTYPE	10-19-98
P7.3	RELEASED FOR PROTOTYPE	10-25-98
P8	RELEASED FOR PROTOTYPE	10-30-98
P9	RELEASED FOR PROTOTYPE	11-02-98
P10	RELEASED FOR PROTOTYPE	11-05-98
P11	RELEASED FOR PROTOTYPE	11-06-98
P12	RELEASED FOR PROTOTYPE	11-13-98
P13	RELEASED FOR PROTOTYPE	11-20-98
P14	RELEASED FOR PROTOTYPE	12-03-98
P15	RELEASED FOR PROTOTYPE	01-04-99
P16	RELEASED FOR PROTOTYPE	01-11-99
P17	RELEASED FOR PROTOTYPE	01-13-99
P18	RELEASED FOR PROTOTYPE	02-08-99
P19	RELEASED FOR PROTOTYPE	02-12-99
P20	RELEASED FOR PROTOTYPE	02-25-99
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P22	RELEASED FOR PROTOTYPE	03-03-99
P23	RELEASED FOR PROTOTYPE	03-22-99
8486183P02 P1_-1	COPIED FROM 8486183P01 No change	14-05-99
8486183P02 P2_-1	COPIED FROM 8486183P01 Added C351 Deleted R353, C206, L201 Changed L250 to 48-05268033 Added L154 Deleted L151	08-08-99 10-08-99
8486183P02 P3_-1	No change in schematic	10-05-99
8486183P02 P4_-1	No change in schematic	10-11-99

REVISIONS

GSM SERVICE SUPPORT GROUP	17.02.00
Level 3 Schematics	Rev. 1.0
Dualband DAO (V8088)	8486183p01
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